

|                  |            |                         |             |   |         |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     |                                |                      |          |     |     |     |
|------------------|------------|-------------------------|-------------|---|---------|----------------------|-----|-----|-----|----------|-----|------|-----|----------|-----|------|-----|----------|-----|-----|-----|--------------------------------|----------------------|----------|-----|-----|-----|
| Akashi College   |            |                         |             | Electrical and Computer Engineering Electrical Engineering Course |         |                      |     |     |     |          |     | Year |     |          |     | 2023 |     |          |     |     |     |                                |                      |          |     |     |     |
| Department Goals |            |                         |             |   |         |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     |                                |                      |          |     |     |     |
| Course Category  |            | Course Title            | Course Code | Credit Type   | Credits | Class Hours per Week |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | Instructor                     | Division in Learning |          |     |     |     |
|                  |            |                         |             |   |         | 1st Year             |     |     |     | 2nd Year |     |      |     | 3rd Year |     |      |     | 4th Year |     |     |     |                                |                      | 5th Year |     |     |     |
|                  |            |                         |             |   |         | 1st                  |     | 2nd |     | 1st      |     | 2nd  |     | 1st      |     | 2nd  |     | 1st      |     | 2nd |     |                                |                      | 1st      |     | 2nd |     |
|                  |            |                         |             |   |         | 1 Q                  | 2 Q | 3 Q | 4 Q | 1 Q      | 2 Q | 3 Q  | 4 Q | 1 Q      | 2 Q | 3 Q  | 4 Q | 1 Q      | 2 Q | 3 Q | 4 Q |                                |                      | 1 Q      | 2 Q | 3 Q | 4 Q |
| General          | Compulsory | Japanese IV             | 5401        | Academic Credit   | 2       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | ZENTOH Masashi                 |                      |          |     |     |     |
| General          | Compulsory | Physical Education IV-1 | 5402        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | GOTOH Takayuki,KO BAYASHI Yuki |                      |          |     |     |     |
| General          | Compulsory | Physical Education IV-2 | 5403        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | GOTOH Takayuki,MAEDA Tadanori  |                      |          |     |     |     |
| General          | Compulsory | English IV A            | 5404        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | AKIMOTO Hiromi                 |                      |          |     |     |     |
| General          | Compulsory | English IV B            | 5405        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | MORIMOTO Nana                  |                      |          |     |     |     |
| General          | Compulsory | Advanced English I      | 5406        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | HERBERT John C.                |                      |          |     |     |     |
| General          | Compulsory | Advanced English II     | 5407        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | HERBERT John C.                |                      |          |     |     |     |
| General          | Elective   | Chinese-1               | 5408        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | ARIKAWA Kei                    |                      |          |     |     |     |
| General          | Elective   | Chinese-2               | 5409        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | ARIKAWA Kei                    |                      |          |     |     |     |
| General          | Elective   | German-1                | 5410        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | YOKOTA Kazuya                  |                      |          |     |     |     |
| General          | Elective   | German-2                | 5411        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | YOKOTA Kazuya                  |                      |          |     |     |     |
| General          | Elective   | French-1                | 5412        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | FUJIMOTO Tomonari              |                      |          |     |     |     |
| General          | Elective   | French-2                | 5413        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | FUJIMOTO Tomonari              |                      |          |     |     |     |
| General          | Elective   | Mathematical Concepts   | 5414        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | MATSUMIYA Atusi                |                      |          |     |     |     |
| General          | Elective   | Overseas Training II    | 5415        | School Credit   | 1       |                      |     |     |     |          |     |      |     |          |     |      |     |          |     |     |     | All faculty of the department  |                      |          |     |     |     |

|             |                   |   |      |                 |   |  |                               |  |
|-------------|-------------------|---|------|-----------------|---|--|-------------------------------|--|
| General     | Common<br>Library | Japanese IV-1                           | 5416 | School Credit   | 1 |  | KUBOTA Ikumi                  |  |
| General     | Common<br>Library | Japanese IV-2                           | 5417 | School Credit   | 1 |  | TANGE Atsuko                  |  |
| Specialized | Common<br>Library | C o + w o r k III A                     | 5418 | School Credit   | 1 |  | All faculty                   |  |
| Specialized | Common<br>Library | C o + w o r k III B                     | 5419 | School Credit   | 1 |  | All faculty                   |  |
| Specialized | Common<br>Library | Applied Physics I                       | 5420 | School Credit   | 1 |  | OGASAWARA Hiromichi           |  |
| Specialized | Common<br>Library | Electronic Circuits I                   | 5421 | School Credit   | 1 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Preliminaries to Graduation Thesis      | 5422 | School Credit   | 1 |  | All faculty of the department |  |
| Specialized | Common<br>Library | Applied Mathematics A                   | 5423 | School Credit   | 2 |  | OGASAWARA Hiromichi           |  |
| Specialized | Common<br>Library | Applied Mathematics B                   | 5424 | School Credit   | 2 |  | OGASAWARA Hiromichi           |  |
| Specialized | Common<br>Library | Electromagnetics II A                   | 5425 | School Credit   | 1 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Electromagnetics II B                   | 5426 | School Credit   | 1 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Solid State Physics A                   | 5427 | Academic Credit | 2 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Solid State Physics B                   | 5428 | Academic Credit | 2 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Applied Physics II                      | 5429 | School Credit   | 1 |  | NAKANISHI Hiroshi             |  |
| Specialized | Common<br>Library | Transient Analysis on Electric Circuits | 5430 | School Credit   | 1 |  | SUYAMA Taikei                 |  |
| Specialized | Common<br>Library | Electronic Circuits II                  | 5431 | School Credit   | 1 |  | OHMUKAI Masato                |  |
| Specialized | Common<br>Library | Control Engineering I                   | 5432 | Academic Credit | 2 |  | ENOMOTO Ryuji                 |  |

|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
|-------------|----------|---|------|-----------------|---|--|--|--|--|--|--|--|---|---|---|---|---|---|--|---|---|---|---|---|---|--|--|--|
| Specialized | Computer | Experiments of Electrical Engineering I A           | 5433 | School Credit   | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4</td><td></td><td></td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   | 4 |   |   |   |   |  | HIROT A<br>Atsushi, TERA<br>SAWA Shinic<br>hi, HIRANO<br>Masatogu,<br>NOMURA<br>Hayato |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   | 4 |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Computer | Experiments of Electrical Engineering I B           | 5434 | School Credit   | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4</td><td></td><td></td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   | 4 |   |   |   |   |  | HIROT A<br>Atsushi, TERA<br>SAWA Shinic<br>hi, HIRANO<br>Masatogu,                     |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   | 4 |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Elective | Off-Campus Practical Training A                     | 5435 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td></td><td></td><td></td></tr></table> |  |  |  |  |  |  |   |   |   |   |   |   |  | 1 |   | 1 |   |   |   |  | All faculty of the department  |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  | 1 |   | 1 |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Elective | Off-Campus Practical Training B                     | 5436 | School Credit   | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td></td><td></td><td></td></tr></table> |  |  |  |  |  |  |   |   |   |   |   |   |  | 2 |   | 2 |   |   |   |  | All faculty of the department  |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  | 2 |   | 2 |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Elective | Computer Architecture                               | 5437 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  | 2 |   |   |   |   |   |  | NOMURA<br>Hayato   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  | 2 |   |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Elective | Discrete Mathematics A                              | 5438 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  | 2 |   |   |   |   |   |  | HAMADA<br>Yukihiro   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  | 2 |   |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
| Specialized | Elective | Discrete Mathematics B                              | 5439 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   | 2 |   |   |   |   |  | HAMADA<br>Yukihiro   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   | 2 |   |   |   |   |  |   |   |   |   |   |   |  |  |  |
| General     | Computer | English V   | 5501 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   | 2 |   |   |  | HIRAKAWA<br>Yuki   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   | 2 |   |   |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Introduction to Japanese Language and Communication | 5502 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   | 2 |   |   |  | TANG E<br>Atsuko   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   | 2 |   |   |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Law   | 5503 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   | 2 |   |   |  | KUROKUI<br>Yoshimi   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   | 2 |   |   |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Philosophy  | 5504 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   | 2 |   |   |  | ARAKAWA<br>Hironori  |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   | 2 |   |   |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Biophysical Chemistry                               | 5505 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   |   | 2 |   |  | OGASAWARA<br>Hiromichi   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   |   | 2 |   |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Scientific Technology and the Environment           | 5506 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   |   |   | 2 |  | IMAIRyoichi  |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   |   |   | 2 |  |   |   |   |   |   |   |  |  |  |
| General     | Elective | Sports Science I                                    | 5507 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table>  |  |  |  |  |  |  |   |   |   |   |   |   |  |   |   |   |   | 2 |   |  | GOTOH<br>Takayuki, KO<br>BAYASHI<br>Yuki   |  |
|             |          |   |      |                 |   |  |  |  |  |  |  |  |   |   |   |   | 2 |   |  |   |   |   |   |   |   |  |  |  |

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|-------------|------------|--|------|-----------------|---|--|--------------------------------|--|
| General     | Elective   | Sports Science II                                | 5508 | School Credit   | 1 |  | GOTO H Takayuki, ISHIDA Masami |  |
| General     | Elective   | T O E I C I                                      | 5509 | School Credit   | 1 |  | INOUE Hidetoshi                |  |
| General     | Elective   | T O E I C II                                     | 5510 | School Credit   | 2 |  | INOUE Hidetoshi                |  |
| General     | Elective   | T O E I C III                                    | 5511 | School Credit   | 3 |  | INOUE Hidetoshi                |  |
| General     | Elective   | Overseas Training III                            | 5512 | School Credit   | 1 |  | All faculty of the department  |  |
| Specialized | Compulsory | Intellectual Property Rights                     | 5513 | School Credit   | 1 |  | MORISADA Yuji                  |  |
| Specialized | Compulsory | Computer Simulation                              | 5514 | School Credit   | 1 |  | OHMU KAI Masato                |  |
| Specialized | Compulsory | Graduation Thesis                                | 5515 | School Credit   | 9 |  | All faculty of the department  |  |
| Specialized | Compulsory | Power Electronics                                | 5516 | School Credit   | 1 |  | HIROTA Atsushi                 |  |
| Specialized | Compulsory | Energy Transmission and Distribution Engineering | 5517 | School Credit   | 1 |  | KONO Yoshiyuki                 |  |
| Specialized | Compulsory | Engineering of Energy Conversion                 | 5518 | School Credit   | 1 |  | HIROTA Atsushi                 |  |
| Specialized | Compulsory | Experiments of Electrical Engineering II         | 5519 | School Credit   | 2 |  | ENOMOTO Ryuji                  |  |
| Specialized | Elective   | Probability and Statistics                       | 5520 | Academic Credit | 2 |  | HAMADA Yukihiko                |  |
| Specialized | Elective   | Information Theory                               | 5521 | School Credit   | 1 |  | NAKAI Yuichi                   |  |
| Specialized | Elective   | Fundamentals of Communication Systems            | 5522 | Academic Credit | 2 |  |                                |  |
| Specialized | Elective   | Communication System                             | 5523 | School Credit   | 1 |  |                                |  |
| Specialized | Elective   | Information Network                              | 5524 | School Credit   | 1 |  | INOUE Kazunari                 |  |

|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |   |   |                |                |  |
|-------------|----------|--|------|-----------------|---|--|--|--|--|--|--|--|--|--|--|--|--|---|---|--|--|--|--|--|---|---|----------------|----------------|--|
| Specialized | Elective | Control Engineering II                                   | 5525 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 2 |   |                | ENOMOTO Ryuji  |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 2 |   |  |  |  |  |  |   |   |                |                |  |
| Specialized | Elective | Solid State Physics C                                    | 5526 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 2 |   |                | OHMUKAI Masato |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 2 |   |  |  |  |  |  |   |   |                |                |  |
| Specialized | Elective | Application of Electronics                               | 5527 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 2 |   |                | ENOMOTO Ryuji  |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 2 |   |  |  |  |  |  |   |   |                |                |  |
| Specialized | Elective | Image Engineering  | 5528 | Academic Credit | 2 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr></table> |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 2 |   |                | NAKAI Yuichi   |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 2 |   |  |  |  |  |  |   |   |                |                |  |
| Specialized | Elective | Qualifications in Electric and Electronic Engineering I  | 5529 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>1</td></tr></table>         |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 1 | 1 | OHMUKAI Masato |                |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |  |   |   |                |                |  |
| Specialized | Elective | Qualifications in Electric and Electronic Engineering II | 5530 | School Credit   | 1 | <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>1</td></tr></table>         |  |  |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  | 1 | 1 | OHMUKAI Masato |                |  |
|             |          |  |      |                 |   |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |  |   |   |                |                |  |

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|--|-------------|---|--|--|--------------|--|--|
| Akashi College   |             | Year  | 2023   |  | Course Title | Japanese IV  |  |
| Course Information   |             |   |  |  |              |  |  |
| Course Code  |             | 5401  |  | Course Category  |              | General / Compulsory   |  |
| Class Format   |             | Lecture   |  | Credits  |              | Academic Credit: 2   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade  |              | 4th  |  |
| Term   |             | First Semester  |  | Classes per Week   |              | 2  |  |
| Textbook and/or Teaching Materials   |             | 野田尚史・森口稔著：日本語を話すトレーニング（ひつじ書房）   |  |  |              |  |  |
| Instructor   |             | ZENTOH Masashi  |  |  |              |  |  |
| Course Objectives  |             |   |  |  |              |  |  |
| 1）報告・論文を、整理した情報を基にして、主張が効果的に伝わるように論理の構成や展開を工夫し、作成することができる。<br>2）作成した報告・論文の内容および自分の思いや考えを、的確に口頭発表することができる。<br>3）課題に応じ、根拠に基づいて議論できる。 |             |   |  |  |              |  |  |
| Rubric   |             |   |  |  |              |  |  |
|  |             | 理想的な到達レベルの目安  |  | 標準的な到達レベルの目安   |              | 未到達レベルの目安  |  |
| 評価項目1  |             | 明確な結論・意見・報告を分かりやすく、論理的・実証的、レイアウトにも優れたレジメに作成できる。   |  | 明確な結論・意見・報告を分かりやすく、論理的・実証的なレジメに作成できる。  |              | 結論・意見・報告を示す材料は上げられるが構成・レイアウトに不備がある。                            |  |
| 評価項目2  |             | 動作・スピード・わかりやすさに優れたプレゼンテーションができ、質問にも的確に答えることができる。  |  | 準備されたプレゼンテーションができるが、質問に対して即座に適切な回答ができない。                                     |              | 読み合わせに近いプレゼンテーションとなっている。                                       |  |
| 評価項目3  |             | テーマに即した意味のある発言が、簡潔・論理的・実証的にできる。   |  | テーマに合った、意味のある発言だが、冗長となっている。  |              | テーマから外れてはいないが、未整理な発言内容である。                                     |  |
| Assigned Department Objectives   |             |   |  |  |              |  |  |
| Teaching Method  |             |   |  |  |              |  |  |
| Outline  |             | テキストの設定に従った学生の発表と、それに対する質疑応答を中心に授業を進行する。日本語を使用する様々な場面での諸問題を取り上げ、日本語の表現と日本人の発想の特徴について、知識の整理、自発的な考察、適切な実践により習得することを目指す。   |  |  |              |  |  |
| Style  |             | 講義形式。学生のプレゼンテーション（A4 1枚のレジメを使用）と質疑応答を中心に、各テーマの理解とプレゼン技術の習得をはかる。   |  |  |              |  |  |
| Notice   |             | 本科目は、授業で保証する学習時間と、予習・復習及び課題レポート作成に必要な標準的な自己学習時間の総計が、90時間に相当する学習内容である。<br>事前学習を含め、発表と質疑応答に意欲的に取り組み、国語表現に必要な知識と技術を確実に習得しよう心がけること。なお適宜、資料を配付し、小テストを実施する。<br>評価の対象としない欠席条件(割合) 1/3以上の欠課 |  |  |              |  |  |
| Characteristics of Class / Division in Learning  |             |   |  |  |              |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT   |  | <input checked="" type="checkbox"/> Applicable to Remote Class               |              | <input type="checkbox"/> Instructor Professionally Experienced |  |
|  |             |   |  |  |              |  |  |
| Course Plan  |             |   |  |  |              |  |  |
|  |             |   | Theme  | Goals  |              |  |  |
| 1st Semester   | 1st Quarter | 1st   | オリエンテーション<br>授業の概要<br>発表予定の立案  | レジメの作成の仕方、プレゼン注意、それぞれの評価基準が理解できる。  |              |  |  |
|  |             | 2nd   | 問い合わせをする<br>トレーニング1の発表と質疑応答<br>上記問題点の考察と整理   | 「問い合わせ」のテーマを理解し、必要な技術（話し方・5W2H・タイミングなど）を中心としたレジメを作成し、プレゼンテーションすることができる。      |              |  |  |
|  |             | 3rd   | お願いをする<br>トレーニング3の発表と質疑応答<br>上記問題点の考察と整理   | 「お願いする」テーマを理解し、必要な技術（気配り・タイミング・話し方など）を中心としたレジメを作成し、プレゼンテーションすることができる。        |              |  |  |
|  |             | 4th   | 誘う・断る・謝る<br>トレーニング5の発表と質疑応答<br>上記問題点の考察と整理   | 対他意識に関するテーマを理解し、必要な技術（気配り・タイミング・話し方）を中心としたレジメを作成し、プレゼンテーションすることができる。         |              |  |  |
|  |             | 5th   | スピーチをする<br>トレーニング9の発表と質疑応答<br>上記問題点の考察と整理  | 「スピーチ」のテーマを理解し、必要な技術（ふさわしい内容・話し方）を中心としたレジメを作成し、プレゼンテーションすることができる。            |              |  |  |
|  |             | 6th   | 文書作成の基礎的技術（図表・引用）  | 図表の作成の仕方、引用の仕方を適切に行える  |              |  |  |
|  |             | 7th   | やさしい日本語<br>トレーニング12の発表と質疑応答<br>上記問題点の考察と整理   | 「やさしい日本語」のテーマを理解し、必要な技術（語選択・異文化理解・マナーなど）を中心としたレジメを作成し、プレゼンテーションすることができる。     |              |  |  |
|  |             | 8th   | 会議で発言する(1)<br>トレーニング10の発表と質疑応答<br>上記問題点の考察と整理  | 「会議での発言」のテーマを理解し、必要な技術（意見整理・決定の仕方・会議進行など）を中心としたレジメを作成し、プレゼンテーションすることができる。    |              |  |  |
|  | 2nd Quarter | 9th   | 会議で発言する(2)+プレゼンテーション（1）<br>トレーニング13の発表と質疑応答<br>上記問題点の考察と整理<br>やさしい日本語<br>トレーニング12の発表と質疑応答<br>上記問題点の考察と整理 | 上記に加え、「プレゼンテーション」のテーマを理解し、必要な技術（材料選択・資料作成など）を中心としたレジメを作成し、プレゼンテーションすることができる。 |              |  |  |

|  |      |  |   |
|--|------|--|---|
|  | 10th | プレゼンテーション(2)<br>トレーニング13の発表と質疑応答<br>上記問題点の考察と整理  | 「プレゼンテーション」のテーマを理解し、必要な技術（材料選択・資料作成など）を中心としたレジメを作成し、プレゼンテーションすることができる。    |
|  | 11th | 研究発表(1)<br>トレーニング14の発表と質疑応答<br>上記問題点の考察と整理       | 「研究発表」のテーマを理解し、必要な技術（スライド・質疑応答など）を中心としたレジメを作成し、プレゼンテーションすることができる。         |
|  | 12th | 研究発表(2)+面接(1)<br>トレーニング15の発表と質疑応答<br>上記問題点の考察と整理 | 「面接」のテーマを理解し、必要な技術（質問意図・種類別の基準・自己紹介の仕方など）を中心としたレジメを作成し、プレゼンテーションすることができる。 |
|  | 13th | 面接(2)<br>トレーニング15の発表と質疑応答<br>上記問題点の考察と整理         | 「面接」のテーマを理解し、必要な技術（志望理由・質問を通じたPRなど）を中心としたレジメを作成し、プレゼンテーションすることができる。       |
|  | 14th | アカデミックライティングの基礎（研究計画書・論文の構成）                     | 研究計画の作成の仕方、論文の書き方の基本を理解することができる   |
|  | 15th | レポート・論文の作成の仕方（パワーライティング・論証・例示）                   | 文章の構成、論証、適切な例示の示し方を理解できる  |
|  | 16th | 期末試験   |   |

#### Evaluation Method and Weight (%)

|          | 試験 | 発表 | 相互評価 | 態度 | ポートフォリオ | その他 | Total |
|----------|----|----|------|----|---------|-----|-------|
| Subtotal | 50 | 50 | 0    | 0  | 0       | 0   | 100   |
| 基礎的能力    | 50 | 50 | 0    | 0  | 0       | 0   | 100   |
| 専門的能力    | 0  | 0  | 0    | 0  | 0       | 0   | 0     |
| 分野横断的能力  | 0  | 0  | 0    | 0  | 0       | 0   | 0     |

|  |             |  |  |   |  |   |  |
|--|-------------|--|--|---|--|---|--|
| Akashi College   |             | Year   | 2023   |   | Course Title   | Physical Education IV-1   |  |
| Course Information   |             |  |  |   |  |   |  |
| Course Code  |             | 5402   |  | Course Category   |  | General / Compulsory  |  |
| Class Format   |             | Skill  |  | Credits   |  | School Credit: 1  |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade   |  | 4th   |  |
| Term   |             | First Semester   |  | Classes per Week  |  | 2   |  |
| Textbook and/or Teaching Materials   |             |  |  |   |  |   |  |
| Instructor   |             | GOTOH Takayuki,KOBAYASHI Yuki  |  |   |  |   |  |
| Course Objectives  |             |  |  |   |  |   |  |
| <ul style="list-style-type: none"><li>Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.</li><li>Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.</li></ul> |             |  |  |   |  |   |  |
| Rubric   |             |  |  |   |  |   |  |
|  |             | Ideal Level  |  | Standard Level  |  | Unacceptable Level  |  |
| Achievement 1  |             | Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.   |  | Participate in classes to improve their health and physical strength. Have some level of self-discipline. |  | Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline. |  |
| Achievement 2  |             | Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.  |  | Can participate in various sport practices and games.   |  | Do not participate in various sport practices and games.  |  |
| Achievement 3  |             | Understand and can play or take on the role of a leader.   |  | Understand the role of a leader, but cannot play that role.   |  | Do not understand the role of a leader. Also, never play that role.   |  |
| Assigned Department Objectives   |             |  |  |   |  |   |  |
| Teaching Method  |             |  |  |   |  |   |  |
| Outline  |             | The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc   |  |   |  |   |  |
| Style  |             | Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.  |  |   |  |   |  |
| Notice   |             | <ul style="list-style-type: none"><li>Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade.</li><li>Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction.</li><li>Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent.</li><li>If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence.</li><li>Students who miss 1/4 or more of classes will not be eligible for evaluation.</li></ul> |  |   |  |   |  |
| Characteristics of Class / Division in Learning  |             |  |  |   |  |   |  |
| <input checked="" type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class  |  | <input type="checkbox"/> Instructor Professionally Experienced  |  |
|  |             |  |  |   |  |   |  |
| Course Plan  |             |  |  |   |  |   |  |
|  |             |  | Theme  |   | Goals  |   |  |
| 1st Semester<br>r  | 1st Quarter | 1st  | Guidance<br>Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc |   | Understand the purposes and objectives of this course. Split into teams in each sport and select a leader. |   |  |
|  |             | 2nd  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 3rd  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 4th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 5th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 6th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 7th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |



|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 8th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  | 2nd Quarter | 9th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Split into teams in each sport and select a leader.                                 |
|  |             | 10th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 11th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 12th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 13th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 14th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 15th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 16th | No final exam  |   |

#### Evaluation Method and Weight (%)

|                         | Approach to a class | Practical skill | Leadership | Total |
|-------------------------|---------------------|-----------------|------------|-------|
| Subtotal                | 75                  | 15              | 10         | 100   |
| Basic Proficiency       | 75                  | 0               | 0          | 75    |
| Specialized Proficiency | 0                   | 0               | 0          | 0     |
| Cross Area Proficiency  | 0                   | 15              | 10         | 25    |

|  |  |                                       |  |  |   |
|--|--|---------------------------------------|--|--|---|
| Akashi College   |  | Year                                  | 2023   | Course Title   | Physical Education IV-2   |
| Course Information   |  |                                       |  |  |   |
| Course Code  | 5403   |                                       |  | Course Category  | General / Compulsory  |
| Class Format   | Skill  |                                       |  | Credits  | School Credit: 1  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       |  | Student Grade  | 4th   |
| Term   | Second Semester  |                                       |  | Classes per Week   | 2   |
| Textbook and/or Teaching Materials   |  |                                       |  |  |   |
| Instructor   | GOTOH Takayuki,MAEDA Tadanori  |                                       |  |  |   |
| Course Objectives  |  |                                       |  |  |   |
| <ul style="list-style-type: none"><li>Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.</li><li>Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.</li></ul> |  |                                       |  |  |   |
| Rubric   |  |                                       |  |  |   |
|  | Ideal Level  |                                       | Standard Level   |  | Unacceptable Level  |
| Achievement 1  | Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.   |                                       | Participate in classes to improve their health and physical strength. Have some level of self-discipline.                      |  | Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline. |
| Achievement 2  | Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.  |                                       | Can participate in various sport practices and games.  |  | Do not participate in various sport practices and games.  |
| Achievement 3  | Understand and can play or take on the role of a leader.   |                                       | Understand the role of a leader, but cannot play that role.  |  | Do not understand the role of a leader. Also, never play that role.   |
| Assigned Department Objectives   |  |                                       |  |  |   |
| Teaching Method  |  |                                       |  |  |   |
| Outline  | The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc   |                                       |  |  |   |
| Style  | Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.  |                                       |  |  |   |
| Notice   | <ul style="list-style-type: none"><li>Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade.</li><li>Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction.</li><li>Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent.</li><li>If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence.</li></ul> Students who miss 1/4 or more of classes will not be eligible for evaluation. |                                       |  |  |   |
| Characteristics of Class / Division in Learning  |  |                                       |  |  |   |
| <input checked="" type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |
|  |  |                                       |  |  |   |
| Course Plan  |  |                                       |  |  |   |
|  |  |                                       | Theme  | Goals  |   |
| 2nd Semester<br>r  | 3rd Quarter  | 1st                                   | Guidance<br>Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Understand the purposes and objectives of this course. Split into teams in each sport and select a leader. |   |
|  |  | 2nd                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|  |  | 3rd                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|  |  | 4th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|  |  | 5th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|  |  | 6th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|  |  | 7th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 8th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  | 4th Quarter | 9th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Split into teams in each sport and select a leader.                                 |
|  |             | 10th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 11th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 12th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 13th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 14th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 15th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 16th | No final exam  |   |

| Evaluation Method and Weight (%) |                     |                 |            |       |
|----------------------------------|---------------------|-----------------|------------|-------|
|                                  | Approach to a class | Practical skill | Leadership | Total |
| Subtotal                         | 75                  | 15              | 10         | 100   |
| Basic Proficiency                | 75                  | 0               | 0          | 75    |
| Specialized Proficiency          | 0                   | 0               | 0          | 0     |
| Cross Area Proficiency           | 0                   | 15              | 10         | 25    |

|   |   |                                       |  |   |   |              |
|---|---|---------------------------------------|--|---|---|--------------|
| Akashi College  |   | Year                                  | 2023   |   | Course Title  | English IV A |
| Course Information  |   |                                       |  |   |   |              |
| Course Code   | 5404  |                                       |  | Course Category   | General / Compulsory  |              |
| Class Format  | Lecture   |                                       |  | Credits   | School Credit: 1  |              |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       |  | Student Grade   | 4th   |              |
| Term  | First Semester  |                                       |  | Classes per Week  | 2   |              |
| Textbook and/or Teaching Materials  | (1) Roman Holiday (2) DataBase (3) NextStage  |                                       |  |   |   |              |
| Instructor  | AKIMOTO Hiromi  |                                       |  |   |   |              |
| Course Objectives   |   |                                       |  |   |   |              |
| (1) Improve the English listening and reading skills: Improve practical English proficiency through listening and reading exercises using a movie-oriented textbook.<br>(2) Improve English vocabulary and grammar: Retain basic English skills through learning English words and grammatical elements.<br>(3) Understand culture and history of English-speaking countries Gain a deeper understanding of American social issues and modern history using videos. |   |                                       |  |   |   |              |
| Rubric  |   |                                       |  |   |   |              |
|   | Ideal Level   |                                       | Standard Level   |   | Unacceptable Level  |              |
| Achievement 1   | Can fully improve practical English proficiency through listening and reading exercises.  |                                       | Can improve practical English proficiency through listening and reading exercises.   |   | Cannot improve practical English proficiency through listening and reading exercises.   |              |
| Achievement 2   | Can fully improve English vocabulary through learning English vocabulary.   |                                       | Can improve English vocabulary through learning English vocabulary.  |   | Cannot improve English vocabulary through learning English vocabulary.  |              |
| Achievement 3   | Fully learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers.  |                                       | Learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers. |   | Do not learn a wide range of knowledge and skills, including the logical thinking and international perspective necessary for future engineers. |              |
| Assigned Department Objectives  |   |                                       |  |   |   |              |
| Teaching Method   |   |                                       |  |   |   |              |
| Outline   | (1) The aim is to improve practical English proficiency through a movie-oriented textbook.<br>(2) Comprehend information from videos and authentic materials and link it to oral speech in English. |                                       |  |   |   |              |
| Style   | There will be vocabulary tests. Lessons explain the key points in the textbook and do practice questions for each unit.   |                                       |  |   |   |              |
| Notice  | Students who miss 1/4 or more of classes will not be eligible for evaluation.<br>Course schedule will be provided in the first week. Be sure to understand in detail.                               |                                       |  |   |   |              |
| Characteristics of Class / Division in Learning   |   |                                       |  |   |   |              |
| <input type="checkbox"/> Active Learning  |   | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class                                      | <input type="checkbox"/> Instructor Professionally Experienced  |              |
| Course Plan   |   |                                       |  |   |   |              |
|   |   |                                       | Theme  | Goals   |   |              |
| 1st Semester<br>r   | 1st Quarter   | 1st                                   | Class guidance<br>Explain how classes will be conducted, vocabulary quizzes, assignments grading system, etc.                            | Gain a proper understanding on the class content and assignments, and plan ahead.                   |   |              |
|   |   | 2nd                                   | Learn culture of English-speaking countries with videos  | Improve vocabulary, grammar, and listening and reading skills through video                         |   |              |
|   |   | 3rd                                   | Unit 1: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 4th                                   | Unit 2: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 5th                                   | Unit 3: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 6th                                   | Learn culture of English-speaking countries with videos  | Improve vocabulary, grammar, and listening and reading skills through video                         |   |              |
|   |   | 7th                                   | Unit 4: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 8th                                   | Unit 5: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   | 2nd Quarter   | 9th                                   | Unit 6: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 10th                                  | Learn culture of English-speaking countries with videos  | Improve vocabulary, grammar, and listening and reading skills through video                         |   |              |
|   |   | 11th                                  | Unit 7: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 12th                                  | Unit 8: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 13th                                  | Unit 9: Learn listening and reading on the topics  | Improve vocabulary, grammar, and listening and reading skills following the topics of the textbook. |   |              |
|   |   | 14th                                  | Learn culture of English-speaking countries with videos  | Improve vocabulary, grammar, and listening and reading skills through video                         |   |              |

|                                  |             |              |                                     |  |           |        |       |
|----------------------------------|-------------|--------------|-------------------------------------|--|-----------|--------|-------|
|                                  |             | 15th         | Q&A for the final exam              | Reflect on the class content so far, and review and answer to questions for the periodic exam. |           |        |       |
|                                  |             | 16th         | The final exam                      | Test their understanding of the class content so far.  |           |        |       |
| Evaluation Method and Weight (%) |             |              |                                     |  |           |        |       |
|                                  | Examination | Presentation | Mutual Evaluations between students | Behavior   | Portfolio | Quizes | Total |
| Subtotal                         | 50          | 0            | 0                                   | 0  | 0         | 50     | 100   |
| Basic Proficiency                | 50          | 0            | 0                                   | 0  | 0         | 50     | 100   |
| Specialized Proficiency          | 0           | 0            | 0                                   | 0  | 0         | 0      | 0     |
| Cross Area Proficiency           | 0           | 0            | 0                                   | 0  | 0         | 0      | 0     |

|   |  |  |  |  |   |  |
|---|--|--|--|--|---|--|
| Akashi College  |  | Year   | 2023   |  | Course Title  | English IV B   |
| Course Information  |  |  |  |  |   |  |
| Course Code   | 5405   |  |  | Course Category  | General / Compulsory  |  |
| Class Format  | Lecture  |  |  | Credits  | School Credit: 1  |  |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |  |  | Student Grade  | 4th   |  |
| Term  | Second Semester  |  |  | Classes per Week   | 2   |  |
| Textbook and/or Teaching Materials  | Our Science (Seibido), Database 4500 (Kiriara), Next Stage (Kiriara)   |  |  |  |   |  |
| Instructor  | MORIMOTO Nana  |  |  |  |   |  |
| Course Objectives   |  |  |  |  |   |  |
| (1) Develop the necessary vocabulary skills, as well as the ability to read and write in English through the practice of reading English content and writing in English.<br>(2) Improve hearing skills and English proficiency by using audio materials or other means.<br>(3) Gain a wide range of knowledge and skills, including an international perspective as an engineer, through dealing with various topics related to modern society. |  |  |  |  |   |  |
| Rubric  |  |  |  |  |   |  |
|   | Ideal Level  |  | Standard Level   |  | Unacceptable Level  |  |
| Achievement 1   | Can fully develop the necessary vocabulary skills, as well as the ability to read and write in English through the practice of reading English content and writing in English.   |  | Can develop the necessary vocabulary skills, as well as the ability to read and write in English through the practice of reading English content and writing in English. |  | Cannot develop the necessary vocabulary skills, as well as the ability to read and write in English through the practice of reading English content and writing in English. |  |
| Achievement 2   | Can fully improve hearing skills and English proficiency by using audio materials that come with the textbook or other means.  |  | Can improve hearing skills and English proficiency by using audio materials that come with the textbook or other means.  |  | Cannot improve hearing skills and English proficiency by using audio materials that come with the textbook or other means.  |  |
| Achievement 3   | Can fully gain a wide range of knowledge and skills, including an international perspective as an engineer, through dealing with various topics related to modern society.   |  | Can gain a wide range of knowledge and skills, including an international perspective as an engineer, through dealing with various topics related to modern society.     |  | Cannot gain a wide range of knowledge and skills, including an international perspective as an engineer, through dealing with various topics related to modern society.     |  |
| Assigned Department Objectives  |  |  |  |  |   |  |
| Teaching Method   |  |  |  |  |   |  |
| Outline   | The aim of this course is to help students improve their English vocabulary and reading comprehension in order to develop English skills they will need as an engineer in the age of globalization, and gain knowledge of the syntax and grammar necessary for reading comprehension.                            |  |  |  |   |  |
| Style   | There will be vocabulary quizzes in every lesson. Students will read English texts and solve exercise questions to test their understanding of the content. We will use CDs to build listening ability. We will practice English writing based on the content learned. There will be assignments as appropriate. |  |  |  |   |  |
| Notice  | Students who miss 1/4 or more of classes will not be eligible for evaluation.  |  |  |  |   |  |
| Characteristics of Class / Division in Learning   |  |  |  |  |   |  |
| <input type="checkbox"/> Active Learning  |  | <input checked="" type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class |   | <input type="checkbox"/> Instructor Professionally Experienced |
|   |  |  |  |  |   |  |
| Course Plan   |  |  |  |  |   |  |
|   |  |  | Theme  |  | Goals   |  |
| 2nd Semester  | 3rd Quarter  | 1st  | Orientation  |  | Gain a proper understanding on the class content and assignments, and plan ahead.   |  |
|   |  | 2nd  | Unit 1   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 3rd  | Unit 2   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 4th  | Unit 3   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 5th  | Exercises  |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 6th  | Unit 4   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 7th  | Unit 5   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 8th  | Unit 6   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   | 4th Quarter  | 9th  | Exercises  |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 10th   | Unit 7   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 11th   | Unit 8   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |
|   |  | 12th   | Unit 9   |  | Understand the English sentences in each Unit and can use them appropriately.   |  |

|  |  |      |            |   |
|--|--|------|------------|---|
|  |  | 13th | Exercises  | Understand the English sentences in each Unit and can use them appropriately. |
|  |  | 14th | Unit 10    | Understand the English sentences in each Unit and can use them appropriately. |
|  |  | 15th | Review     | Summary of the content learned.   |
|  |  | 16th | Final exam | Test their understanding of the class content so far.                         |

|                                  |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|
| Evaluation Method and Weight (%) |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 50          | 0            | 0                                   | 0        | 0         | 50    | 100   |
| Basic Proficiency       | 50          | 0            | 0                                   | 0        | 0         | 50    | 100   |
| Specialized Proficiency | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |  |      |   |                      |  |
|--|--|------|---|----------------------|--|
| Akashi College   |  | Year | 2023  | Course Title         | Advanced English I   |
| Course Information   |  |      |   |                      |  |
| Course Code  | 5406   |      | Course Category   | General / Compulsory |  |
| Class Format   | Lecture  |      | Credits   | School Credit: 1     |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |      | Student Grade   | 4th                  |  |
| Term   | First Semester   |      | Classes per Week  | 2                    |  |
| Textbook and/or Teaching Materials   | Knockout Presentations - How to Deliver Your Message with Power, Punch, and Pizzazz (Third Edition) [Available on paperback or e-book], Morgan James Publishing, © 2019 by Diane DiResta. This book is required for both Advanced English I & II .   |      |   |                      |  |
| Instructor   | HERBERT John C.  |      |   |                      |  |
| Course Objectives  |  |      |   |                      |  |
| 1) Mastering presentation delivery skills<br>2) Writing stimulating presentation content<br>3) Recognizing weaknesses in presentations and tactfully suggesting ideas for peer and self-improvement<br>4) Using Visual Aids effectively in a presentation<br>5) Handling questions from the audience skillfully<br>6) Writing conference proposals |  |      |   |                      |  |
| Rubric   |  |      |   |                      |  |
|  | Mastery Level  |      | Standard Level  |                      | Unacceptable Level   |
| Objective 1<br>Mastering presentation delivery skills  | Able to use confident body language, a strong voice, great eye contact, appropriate intonation and stress, and natural gestures in a presentation  |      | Able to show an awareness of how to use body language, voice projection, eye contact, intonation, stress, and gestures in a presentation                |                      | Cannot use body language, voice projection, eye contact, intonation, stress, or gestures appropriately in a presentation |
| Objective 2<br>Writing stimulating presentation content  | Able to write persuasive and interesting presentation content  |      | Able to show an awareness of how to write persuasive and interesting presentation content   |                      | Cannot write persuasive or interesting presentation content  |
| Objective 3<br>Peer and self-critiquing  | Able to give tactful and constructive criticism and advice in peer critiques and to write well thought out self-reflections  |      | Able to show an awareness of how to give tactful and constructive criticism and advice in peer critiques and to write well thought out self-reflections |                      | Cannot give tactful or constructive criticism or advice in peer critiques and not able to write sincere self-reflections |
| Objective 4<br>Using visual aids effectively in a presentation   | Able to create and use visual aids that are easy for the audience to look at and understand  |      | Able to show an awareness of how to create and use visual aids that are easy for the audience to look at and understand                                 |                      | Cannot create or properly use visual aids that are easy for the audience to look at and understand                       |
| Objective 5<br>Handling questions from the audience skillfully   | Able to handle difficult questions from a presentation audience tactfully and confidently  |      | Able to show an awareness of how to handle difficult questions from a presentation audience tactfully and confidently                                   |                      | Cannot handle questions from the audience with confidence  |
| Objective 6<br>Writing conference proposals  | Able to write research abstracts and summaries as impressive conference presentation proposals   |      | Able to show an awareness of how to write research abstracts and summaries as conference presentation proposals   |                      | Cannot write research abstracts or summaries in English  |
| Assigned Department Objectives   |  |      |   |                      |  |
| Teaching Method  |  |      |   |                      |  |
| Outline  | Advanced English I involves the preparation and confident delivery of English presentations designed for professional and business contexts.   |      |   |                      |  |
| Style  | There will be several short assignments and activities from the textbook to prepare students for their initial and final presentations.  |      |   |                      |  |
|  | For Akashi Kosen students, the class will meet in the Global Terrace, but they may be asked to do group work with students from other NIT campuses in TEAMS channels assigned to them during class time.   |      |   |                      |  |
|  | Students from other NIT campuses, who have been accepted into this class, may join each class via TEAMS.   |      |   |                      |  |
|  | The final project of this course is an (in class) online "Professional and Business English Presentation Contest," where the students will present their work orally in front of peers and teachers. In addition to the 20 students enrolled in class, up to five additional individuals and/or teams of 2 or 3 students might be accepted for participation in the online contest through a vetting process. All participants will receive a "Certificate of Achievement" unless they are among the top ranked contestants, in which case they will receive a "Certificate of Excellence" with their ranking indicated. |      |   |                      |  |
| Notice   | Students who miss 1/4 or more of classes will not be eligible for evaluation.  |      |   |                      |  |
|  | Students must critique each other's work and self-reflect on each of their practice presentation performances.   |      |   |                      |  |
|  | Final contest eligibility for those who are not enrolled in the class will be extended to all interested NIT students regardless of their nationality, native language, or academic year.  |      |   |                      |  |
|  | Students must not recycle their presentation content from or into any other presentations for other class assignments or contests such as COCET's English Presentation Contest.  |      |   |                      |  |
|  | Whether the students participate in person or through a live camera projection, the teacher must be able to see ALL of the participants engaged in relevant class time behavior throughout the duration of each class. Otherwise, the teacher reserves the right to mark the student absent. Students joining via TEAMS must leave their cameras on.   |      |   |                      |  |



## Characteristics of Class / Division in Learning

|   |                                       |  |  |
|---|---------------------------------------|--|--|
| <input checked="" type="checkbox"/> Active Learning | <input type="checkbox"/> Aided by ICT | <input checked="" type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced |
|---|---------------------------------------|--|--|

## Course Plan

|              |             |      | Theme   | Goals   |
|--------------|-------------|------|---|---|
| 1st Semester | 1st Quarter | 1st  | Course and textbook introductions<br>Dos and don'ts of public speaking<br>Homework: 1) Choose a presentation topic.<br>2) Read "Unit 1: Secrets of Platform Effectiveness"  | Consider how to make the most of the course and textbook this semester.<br>Begin planning a persuasive presentation.  |
|              |             | 2nd  | Unit 1: Secrets of Platform Effectiveness<br>Homework: 1) Write a presentation outline.<br>2) Read "Unit 7: Listener-Centered Communication: Principles of Persuasion."   | Learn about the common myths of public speaking and mistakes that many speakers make.<br>Learn tips for writing a presentation outline and organizing presentation content. |
|              |             | 3rd  | Unit 7: Listener-Centered Communication<br>Principles of Persuasion (Part One)<br>Critique a classmate's outline.<br>Homework: 1) Write a first draft of your presentation.<br>2) Review "Unit 7: Principles of Persuasion"                                   | Study techniques that will make you a more persuasive presenter.<br>Work together with peers to improve your presentation focus.  |
|              |             | 4th  | Unit 7: Listener-Centered Communication<br>Principles of Persuasion (Part Two)<br>Critique a classmate's first draft.<br>Homework: Revise and rehearse your presentation.   | Study techniques that will make you a more persuasive presenter.<br>Work together with peers to improve your presentation content.  |
|              |             | 5th  | Presentation workshop<br>Peer critiques<br>Homework: Rehearse your presentation and visualize/dream of having a perfect performance.  | Work in groups to help each other rehearse and polish the forthcoming "Initial Presentations."<br>Complete peer evaluation forms.   |
|              |             | 6th  | Initial Presentations (Part One)<br>Homework: Write your self-reflection report on how you may have done a better Initial Presentation.   | Make a persuasive presentation in English with confidence and enthusiasm. We will do the first 10 of 20 presentations in this class.  |
|              |             | 7th  | Initial Presentations (Part Two)<br>Homework: 1) Write your self-reflection report on how you may have done a better Initial Presentation.<br>2) Read "Unit 2: Sizzle or Steak?"  | Make a persuasive presentation in English with confidence and enthusiasm. We will do the second 10 of 20 presentations in this class.                                       |
|              |             | 8th  | Unit 2: Sizzle or Steak?<br>Adding pizzazz to your presentation (Part One)<br>Homework: 1) Rewrite your presentation transcript based on self-reflection, peer critiques, and teacher feedback.<br>2) Review "Unit 2: Sizzle or Steak?"                       | Develop visual, vocal, and verbal presentation delivery skills.<br>Work together with peers to improve your presentation content.   |
|              | 2nd Quarter | 9th  | Unit 2: Sizzle or Steak?<br>Adding pizzazz to your presentation (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Read "Unit 3: Fear Fixes: Conquering Nervousness"  | Develop visual, vocal, and verbal presentation delivery skills.<br>Prepare for your final presentation.   |
|              |             | 10th | Unit 3: Fear Fixes<br>Conquering Nervousness (Part One)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Review "Unit 3: Fear Fixes: Conquering Nervousness"   | Practice exercises that may help you control your nervousness when you perform in front of an audience. Prepare for your final presentation.                                |
|              |             | 11th | Unit 3: Fear Fixes<br>Conquering Nervousness (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Read "Unit 4: Listening: The Other Side of Speaking"  | Practice exercises that may help you control your nervousness when you perform in front of an audience. Prepare for your final presentation.                                |
|              |             | 12th | Unit 4: Listening: The Other Side of Speaking<br>Becoming a better listener and helping others to listen to you (Part One)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Review "Unit 4: Listening: The Other Side of Speaking" | Practice exercises that may help you become a better listener and help others to listen to you. Prepare for your final presentation.  |
|              |             | 13th | Unit 4: Listening: The Other Side of Speaking<br>Becoming a better listener and helping others to listen to you (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)   | Practice exercises that may help you become a better listener and help others to listen to you. Prepare for your final presentation.  |
|              |             | 14th | Presentation workshop<br>Peer critiques<br>Homework: Rehearse your presentation and visualize/dream of having a perfect performance.  | Work in groups to help each other rehearse and polish the forthcoming "Final Presentations."<br>Complete peer evaluation forms.   |

|  |  |      |   |  |
|--|--|------|---|--|
|  |  | 15th | Final presentation in the context of a presentation contest within the class<br>Summer Homework (For Advanced English II):<br>Choose a topic for a research conference presentation and write an abstract and summary as a presentation proposal. | Presentation grades will be determined by how well the presentation reflects the acquisition and implementation of presentation techniques learned from this course.<br>The winners of the contest will be determined separately, without direct references to the content taught in the course. |
|  |  | 16th | No Test   |  |

#### Evaluation Method and Weight (%)

|                                  | Short Assignments/Reflective Writing | Initial Presentation | Final Presentation | Total |
|----------------------------------|--------------------------------------|----------------------|--------------------|-------|
| Subtotal                         | 30                                   | 30                   | 40                 | 100   |
| Professional Presentation Skills | 30                                   | 30                   | 40                 | 100   |

|  |  |   |  |  |                     |
|--|--|---|--|--|---------------------|
| Akashi College   |  | Year  | 2023   | Course Title   | Advanced English II |
| Course Information   |  |   |  |  |                     |
| Course Code  | 5407   |   | Course Category  | General / Compulsory   |                     |
| Class Format   | Lecture  |   | Credits  | School Credit: 1   |                     |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  | 4th  |                     |
| Term   | Second Semester  |   | Classes per Week   | 2  |                     |
| Textbook and/or Teaching Materials   | Knockout Presentations - How to Deliver Your Message with Power, Punch, and Pizzazz (Third Edition) [Available on paperback or e-book], Morgan James Publishing, © 2019 by Diane DiResta. This book is required for both Advanced English I & II .   |   |  |  |                     |
| Instructor   | HERBERT John C.  |   |  |  |                     |
| Course Objectives  |  |   |  |  |                     |
| 1) Mastering presentation delivery skills<br>2) Writing stimulating presentation content<br>3) Recognizing weaknesses in presentations and tactfully suggesting ideas for peer and self-improvement<br>4) Using Visual Aids effectively in a presentation<br>5) Handling questions from the audience skillfully<br>6) Writing conference proposals |  |   |  |  |                     |
| Rubric   |  |   |  |  |                     |
|  | 理想的な到達レベルの目安   | 標準的な到達レベルの目安  | 未到達レベルの目安  |  |                     |
| 評価項目1<br>Mastering presentation delivery skills  | Able to use confident body language, a strong voice, great eye contact, appropriate intonation and stress, and natural gestures in a presentation  | Able to show an awareness of how to use body language, voice projection, eye contact, intonation, stress, and gestures in a presentation                | Cannot use body language, voice projection, eye contact, intonation, stress, or gestures appropriately in a presentation |  |                     |
| 評価項目2<br>Writing stimulating presentation content  | Able to write persuasive and interesting presentation content  | Able to show an awareness of how to write persuasive and interesting presentation content   | Cannot write persuasive or interesting presentation content  |  |                     |
| 評価項目3<br>Peer and self-critiquing  | Able to give tactful and constructive criticism and advice in peer critiques and to write well thought out self-reflections  | Able to show an awareness of how to give tactful and constructive criticism and advice in peer critiques and to write well thought out self-reflections | Cannot give tactful or constructive criticism or advice in peer critiques and not able to write sincere self-reflections |  |                     |
| 評価項目4<br>Using visual aids effectively in a presentation   | Able to create and use visual aids that are easy for the audience to look at and understand  | Able to show an awareness of how to create and use visual aids that are easy for the audience to look at and understand                                 | Cannot create or properly use visual aids that are easy for the audience to look at and understand                       |  |                     |
| 評価項目5<br>Handling questions from the audience skillfully   | Able to handle difficult questions from a presentation audience tactfully and confidently  | Able to show an awareness of how to handle difficult questions from a presentation audience tactfully and confidently                                   | Cannot handle questions from the audience with confidence  |  |                     |
| 評価項目6<br>Writing conference proposals  | Able to write research abstracts and summaries as impressive conference presentation proposals   | Able to show an awareness of how to write research abstracts and summaries as conference presentation proposals   | Cannot write research abstracts or summaries in English  |  |                     |
| Assigned Department Objectives   |  |   |  |  |                     |
| Teaching Method  |  |   |  |  |                     |
| Outline  | Advanced English II involves the preparation and confident delivery of English presentations designed for professional research conferences.   |   |  |  |                     |
| Style  | There will be several short assignments and activities from the textbook to prepare students for their initial and final presentations.<br><br>For Akashi Kosen students, the class will meet in the Global Terrace, but they may be asked to do group work with students from other NIT campuses in TEAMS channels assigned to them during class time.<br><br>Students from other NIT campuses, who have been accepted into this class, may join each class via TEAMS.<br><br>The final project of this course is an (in class) online "Mock Research Conference," where the students will present their work orally in front of peers and teachers.  |   |  |  |                     |
| Notice   | 評価の対象としない欠席条件(割合) 1/4以上の欠課。<br><br>Students must critique each other's work and self-reflect on each of their practice presentation performances.<br><br>Students must not recycle their presentation content from or into any other presentations for other class assignments or contests such as COCET's English Presentation Contest.<br><br>Whether the students participate in person or through a live camera projection, the teacher must be able to see ALL of the participants engaged in relevant class time behavior throughout the duration of each class. Otherwise, the teacher reserves the right to mark the student absent. Students joining via TEAMS must leave their cameras on. |   |  |  |                     |
| Characteristics of Class / Division in Learning  |  |   |  |  |                     |
| <input checked="" type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT   |  | <input checked="" type="checkbox"/> Applicable to Remote Class |                     |
|  |  |   |  | <input type="checkbox"/> Instructor Professionally Experienced |                     |
| Course Plan  |  |   |  |  |                     |

|              |             |      | Theme  | Goals  |
|--------------|-------------|------|--|--|
| 2nd Semester | 3rd Quarter | 1st  | Unit 5: Research and Analyze Your Audience<br>Designing an audience-centered presentation (Part One)<br>Critique your classmate's conference proposal (From your summer homework: The research abstract and summary)<br>Homework: 1) Rewrite your abstract and summary based on comments from your peers and your teacher.<br>2) Read/review "Unit 5: Research and Analyze Your Audience." | Practice exercises that may help you reach your audience effectively.<br>Begin planning a mock conference presentation.  |
|              |             | 2nd  | Unit 5: Research and Analyze Your Audience<br>Designing an audience-centered presentation (Part Two)<br>Homework: 1) Write a presentation outline.<br>2) Read "Unit 6: Building Your Presentation."  | Practice exercises that may help you reach your audience effectively.<br>Learn tips for writing a research presentation outline and organizing presentation content.         |
|              |             | 3rd  | Unit 6: Building Your Presentation<br>Structuring a research presentation (Part One)<br>Critique a classmate's outline.<br>Homework: 1) Write a first draft of your presentation.<br>2) Review "Unit 6: Building Your Presentation"  | Organize the structure of your research presentation in a logical and systematic matter.<br>Work together with peers to improve your presentation focus.                     |
|              |             | 4th  | Unit 6: Building Your Presentation<br>Structuring a research presentation (Part Two)<br>Critique a classmate's first draft.<br>Homework: Revise and rehearse your presentation.  | Organize the structure of your research presentation in a logical and systematic matter.<br>Work together with peers to improve your presentation content.                   |
|              |             | 5th  | Presentation workshop<br>Peer critiques<br>Homework: Rehearse your presentation and visualize/dream of having a perfect performance.   | Work in groups to help each other rehearse and polish the forthcoming "Initial Presentations."<br>Complete peer evaluation forms.  |
|              |             | 6th  | Initial Presentations (Part One)<br>Homework: Write your self-reflection report on how you may have done a better Initial Presentation.  | Present your research in English with confidence and enthusiasm. We will do the first 10 of 20 presentations in this class.  |
|              |             | 7th  | Initial Presentations (Part Two)<br>Homework: 1) Write your self-reflection report on how you may have done a better Initial Presentation.<br>2) Read "Unit 8: Seeing Is Believing."   | Present your research in English with confidence and enthusiasm. We will do the second 10 of 20 presentations in this class.   |
|              |             | 8th  | Unit 8: Seeing Is Believing<br>Creating and using visual aids effectively (Part One)<br>Homework: 1) Rewrite your presentation transcript based on self-reflection, peer critiques, and teacher feedback.<br>2) Review "Unit 8: Seeing Is Believing."  | Create and practice using visual aids effectively.<br>Work together with peers to improve your presentation content and visual aids.   |
|              | 4th Quarter | 9th  | Unit 8: Seeing Is Believing<br>Creating and using visual aids effectively (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Read "Unit 9: Setting the Stage"  | Create and practice using visual aids effectively.<br>Work together with peers to improve your presentation content and visual aids.<br>Prepare for your final presentation. |
|              |             | 10th | Unit 9: Setting the Stage<br>Logistical considerations for setting up a presentation (Part One)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Review "Unit 9: Setting the Stage."  | Consider ways to use the surroundings of your presentation stage to your advantage.<br>Prepare for your final presentation.  |
|              |             | 11th | Unit 9: Setting the Stage<br>Logistical considerations for setting up a presentation (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Read "Unit 10: Q&A, Difficult People, and Deadly Disasters."   | Consider ways to use the surroundings of your presentation stage to your advantage.<br>Prepare for your final presentation.  |
|              |             | 12th | Unit 10: Q&A, Difficult People, and Deadly Disasters<br>Handling question and answers calmly and effectively (Part One)<br>Final Presentation rehearsals (In class and/or as homework)<br>Homework: Review "Unit 10: Q&A, Difficult People, and Deadly Disasters."   | Learn how to handle difficult audience members and difficult questions.<br>Prepare for your final presentation.  |
|              |             | 13th | Unit 10: Q&A, Difficult People, and Deadly Disasters<br>Handling question and answers calmly and effectively (Part Two)<br>Final Presentation rehearsals (In class and/or as homework)   | Learn how to handle difficult audience members and difficult questions.<br>Prepare for your final presentation.  |
|              |             | 14th | Presentation workshop<br>Peer critiques<br>Homework: Rehearse your presentation and visualize/dream of having a perfect performance.   | Work in groups to help each other rehearse and polish the forthcoming "Final Presentations."<br>Complete peer evaluation forms.  |

|                                  |  |                                      |  |  |       |
|----------------------------------|--|--------------------------------------|--|--|-------|
|                                  |  | 15th                                 | Final presentation in the context of a mock research conference within the class | Presentation grades will be determined by how well the presentation reflects the acquisition and implementation of presentation techniques learned from this course. |       |
|                                  |  | 16th                                 | No Test  |  |       |
| Evaluation Method and Weight (%) |  |                                      |  |  |       |
|                                  |  | Short Assignments/Reflective Writing | Initial Presentation   | Final Presentation   | Total |
| Subtotal                         |  | 30                                   | 30   | 40   | 100   |
| Professional Presentation Skills |  | 30                                   | 30   | 40   | 100   |

|   |   |                                       |  |  |  |
|---|---|---------------------------------------|--|--|--|
| Akashi College  |   | Year                                  | 2023   | Course Title   | Chinese-1  |
| Course Information  |   |                                       |  |  |  |
| Course Code   | 5408  |                                       | Course Category  | General / Elective   |  |
| Class Format  | Lecture   |                                       | Credits  | School Credit: 1   |  |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 4th  |  |
| Term  | First Semester  |                                       | Classes per Week   | 2  |  |
| Textbook and/or Teaching Materials  | 虞萍：「ペアで学ぼう！中国語」朝日出版社.   |                                       |  |  |  |
| Instructor  | ARIKAWA Kei   |                                       |  |  |  |
| Course Objectives   |   |                                       |  |  |  |
| ①中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養うように目指します。<br>②挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取れることを目指します。<br>③中国人の考え方や生活習慣、中国文化に対する理解を深めていきます。 |   |                                       |  |  |  |
| Rubric  |   |                                       |  |  |  |
|   | 理想的な到達レベルの目安  |                                       | 標準的な到達レベルの目安   |  | 未到達レベルの目安  |
| 評価項目1   | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を十分に養っている。   |                                       | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養っている。       |  | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養えていない。            |
| 評価項目2   | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語で十分にコミュニケーションを取ることができる。   |                                       | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができる。 |  | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができない。      |
| 評価項目3   | 中国人の考え方や生活習慣、中国文化に対する理解を十分深めている。  |                                       | 中国人の考え方や生活習慣、中国文化に対する理解を深めている。                           |  | 中国人の考え方や生活習慣、中国文化に対する理解を深めていない。                                |
| Assigned Department Objectives  |   |                                       |  |  |  |
| Teaching Method   |   |                                       |  |  |  |
| Outline   | 外国語の勉強に肝心なのは発音と言われています。中国語も例外ではありません。この授業では、発音を丁寧に学び、焦らずにしっかりとレベルアップを図りながら、「聞く」「話す」「読む」「書く」の能力をバランスよく身につけることを目指します。また、中国の社会や文化などにも触れながら、よりスムーズにコミュニケーションを取れるように異文化への理解も深めていきます。 |                                       |  |  |  |
| Style   | ①事前に予習を行い、学習ポイント把握したうえで授業に臨むこと。<br>②授業に積極的に参加すること。<br>③発声練習、会話練習にしっかり取り組むこと。<br>④予習時に生じた疑問や、授業中に理解できない事項は質問をすること。<br>連絡員：井上英俊   |                                       |  |  |  |
| Notice  | 目標達成のため、次の自己学習が必要である。<br>①学習ポイントを把握し授業の理解度を高めるため、予習を行うこと。<br>②授業で学習した後には必ず復習を行うこと。<br>③テキストの添付CDや音声ストリーミングURLを活用し、中国語の発音を自主的練習すること。<br>合格の対象としない欠席条件(割合) 1/4以上の欠課               |                                       |  |  |  |
| Characteristics of Class / Division in Learning   |   |                                       |  |  |  |
| <input type="checkbox"/> Active Learning  |   | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced |
|   |   |                                       |  |  |  |
| Course Plan   |   |                                       |  |  |  |
|   |   |                                       | Theme  | Goals  |  |
| 1st Semester  | 1st Quarter   | 1st                                   | 発音 1、2、3   | 声調、単母音、子音を学ぶ。  |  |
|   |   | 2nd                                   | 発音 4、5   | 複合母音、鼻音を伴う母音を学ぶ。   |  |
|   |   | 3rd                                   | 第 1 課 あなたは日本人ですか？  | 人称代詞、名前の聞き方と答え方、動詞述語文を学ぶ。                                      |  |
|   |   | 4th                                   | 第 1 課 文法のまとめ   | 練習 I、II を学ぶ。   |  |
|   |   | 5th                                   | 第 2 課 あなたは何を学びますか？                                       | 「的」の使い方、副詞「也」、疑問詞「什么」を学ぶ。                                      |  |
|   |   | 6th                                   | 第 2 課 文法のまとめ   | 練習 I、II を学ぶ。   |  |
|   |   | 7th                                   | 第 3 課 あなたは最近どうですか？                                       | 形容詞述語文、「」＋動詞、副詞「都」を学ぶ。   |  |
|   |   | 8th                                   | 復習と中間テスト   | 既習内容を復習する。   |  |
|   | 2nd Quarter   | 9th                                   | 第 3 課 文法のまとめ   | 練習 I、II を学ぶ。   |  |
|   |   | 10th                                  | 第 4 課 これはどなたの辞書ですか？                                      | 指示代詞、量詞、反復疑問文を学ぶ。  |  |
|   |   | 11th                                  | 第 4 課 文法のまとめ   | 練習 I、II を学ぶ。   |  |
|   |   | 12th                                  | 第 5 課 彼はいつ北京に来ますか？                                       | 時間の言い方、「……吧」の使い方、「去/来/回/到」＋場所＋動詞を学ぶ。                           |  |
|   |   | 13th                                  | 第 5 課 文法のまとめ   | 練習 I、II を学ぶ。   |  |
|   |   | 14th                                  | 第 6 課 図書館はどこにありますか？                                      | 「有」と「在」、主述述語文、「几」と「多少」を学ぶ。                                     |  |
|   |   | 15th                                  | 前期総まとめ   | 復習と質問応答を実施する。  |  |
|   |   | 16th                                  | 期末試験   |  |  |
| Evaluation Method and Weight (%)  |   |                                       |  |  |  |
|   | 定期試験  |                                       | 小テスト   | 平常点  | Total  |

|          |    |    |    |     |
|----------|----|----|----|-----|
| Subtotal | 60 | 20 | 20 | 100 |
| 基礎的能力    | 60 | 20 | 20 | 100 |
| 專門的能力    | 0  | 0  | 0  | 0   |
| 分野横断的能力  | 0  | 0  | 0  | 0   |

|   |             |   |                               |  |  |  |
|---|-------------|---|-------------------------------|--|--|--|
| Akashi College  |             | Year  | 2023                          |  | Course Title                             | Chinese-2  |
| Course Information  |             |   |                               |  |  |  |
| Course Code   |             | 5409  |                               | Course Category  | General / Elective                       |  |
| Class Format  |             | Lecture   |                               | Credits  | School Credit: 1                         |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |                               | Student Grade  | 4th                                      |  |
| Term  |             | Second Semester   |                               | Classes per Week   | 2  |  |
| Textbook and/or Teaching Materials  |             | 虞萍：「ペアで学ぼう！中国語」朝日出版社.   |                               |  |  |  |
| Instructor  |             | ARIKAWA Kei   |                               |  |  |  |
| Course Objectives   |             |   |                               |  |  |  |
| ①中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養うように目指します。<br>②挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取れることを目指します。<br>③中国人の考え方や生活習慣、中国文化に対する理解を深めていきます。 |             |   |                               |  |  |  |
| Rubric  |             |   |                               |  |  |  |
|   |             | 理想的な到達レベルの目安  |                               | 標準的な到達レベルの目安   |  | 未到達レベルの目安  |
| 評価項目1   |             | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を十分に養っている。   |                               | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養っている。             |  | 中国語の発音をマスターし、基礎的な語彙と文法の規則を応用できるようにし、会話力と読解力を養っていない。            |
| 評価項目2   |             | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語で十分にコミュニケーションを取ることができる。   |                               | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができる。       |  | 挨拶や日常会話など、身の回りの事を実用的な中国語で表現でき、簡単な中国語でコミュニケーションを取ることができない。      |
| 評価項目3   |             | 中国人の考え方や生活習慣、中国文化に対する理解を十分深めている。  |                               | 中国人の考え方や生活習慣、中国文化に対する理解を深めている。                                 |  | 中国人の考え方や生活習慣、中国文化に対する理解を深めていない。                                |
| Assigned Department Objectives  |             |   |                               |  |  |  |
| Teaching Method   |             |   |                               |  |  |  |
| Outline   |             | 外国語の勉強に肝心なのは発音と言われています。中国語も例外ではありません。この授業では、発音を丁寧に学び、焦らずにしっかりとレベルアップを図りながら、「聞く」「話す」「読む」「書く」の能力をバランスよく身につけることを目指します。また、中国の社会や文化などにも触れながら、よりスムーズにコミュニケーションを取れるように異文化への理解も深めていきます。 |                               |  |  |  |
| Style   |             | ①事前に予習を行い、学習ポイント把握したうえで授業に臨むこと。<br>②授業に積極的に参加すること。<br>③発声練習、会話練習にしっかり取り組むこと。<br>④予習時に生じた疑問や、授業中に理解できない事項は質問をすること。<br>連絡員：井上英俊   |                               |  |  |  |
| Notice  |             | 目標達成のため、次の自己学習が必要である。<br>①学習ポイントを把握し授業の理解度を高めるため、予習を行うこと。<br>②授業で学習した後に必ず復習を行うこと。<br>③テキストの添付CDや音声ストリーミングURLを活用し、中国語の発音を自主的練習すること。<br>合格の対象としない欠席条件(割合) 1/4以上の欠課                |                               |  |  |  |
| Characteristics of Class / Division in Learning   |             |   |                               |  |  |  |
| <input type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT   |                               | <input checked="" type="checkbox"/> Applicable to Remote Class |  | <input type="checkbox"/> Instructor Professionally Experienced |
|   |             |   |                               |  |  |  |
| Course Plan   |             |   |                               |  |  |  |
|   |             |   | Theme                         |  | Goals                                    |  |
| 2nd Semester<br>r   | 3rd Quarter | 1st   | 前期内容の復習                       |  | 前期の内容を復習する。                              |  |
|   |             | 2nd   | 第7課 あなたは紅茶を飲みますかそれとも緑茶を飲みますか？ |  | A「是」B、「想」＋動詞/「要」＋動詞、比較の表現を学ぶ。            |  |
|   |             | 3rd   | 第7課 文法のまとめ                    |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 4th   | 第8課 あなたはどれが好きですか？             |  | 疑問詞「哪」、動詞の重ね型、主題化目的語を文頭に出す表現を学ぶ。         |  |
|   |             | 5th   | 第8課 文法のまとめ                    |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 6th   | 第9課 あなたは毎日何時間寝ますか？            |  | 期間〈時間量〉、様態補語を導く「得」、「怎么」を学ぶ。              |  |
|   |             | 7th   | 第9課 文法のまとめ                    |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 8th   | 復習と中間テスト                      |  | 既習内容を復習する。                               |  |
|   | 4th Quarter | 9th   | 第10課 あなたはさっきどこに行きましたか？        |  | 過去の経験を表わす 動詞＋「了」、「了」の使い方、「又」「再」「了」を学ぶ。   |  |
|   |             | 10th  | 第10課 文法のまとめ                   |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 11th  | 第11課 あなたは何をしていますか？            |  | 進行と持続のAspect、「一会儿」「有点儿」「一点儿」、「打算」＋動詞を学ぶ。 |  |
|   |             | 12th  | 第11課 文法のまとめ                   |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 13th  | 第12課 あなたは車の運転ができますか？          |  | 助動詞「会」「能」「可以」、二重目的語、禁止の表現「別……/不要……」を学ぶ。  |  |
|   |             | 14th  | 第12課 文法のまとめ                   |  | 練習Ⅰ、Ⅱを学ぶ。                                |  |
|   |             | 15th  | 後期総まとめ                        |  | 復習と質問応答を実施する。                            |  |
|   |             | 16th  | 期末試験                          |  |  |  |



| Evaluation Method and Weight (%) |      |      |     |       |
|----------------------------------|------|------|-----|-------|
|                                  | 定期試験 | 小テスト | 平常点 | Total |
| Subtotal                         | 60   | 20   | 20  | 100   |
| 基礎的能力                            | 60   | 20   | 20  | 100   |
| 専門的能力                            | 0    | 0    | 0   | 0     |
| 分野横断的能力                          | 0    | 0    | 0   | 0     |

|  |             |  |                                    |   |  |  |
|--|-------------|--|------------------------------------|---|--|--|
| Akashi College   |             | Year   | 2023                               |   | Course Title   | German-1   |
| Course Information   |             |  |                                    |   |  |  |
| Course Code  |             | 5410   |                                    | Course Category   | General / Elective   |  |
| Class Format   |             | Lecture  |                                    | Credits   | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                    | Student Grade   | 4th  |  |
| Term   |             | First Semester   |                                    | Classes per Week  | 2  |  |
| Textbook and/or Teaching Materials   |             | DVDわかるぞドイツ語！見えるぞドイツ語！ 春日正男、松澤淳（朝日出版社）  |                                    |   |  |  |
| Instructor   |             | YOKOTA Kazuya  |                                    |   |  |  |
| Course Objectives  |             |  |                                    |   |  |  |
| ●The goal is to clearly understand German sentence structure and rules, and to be able to read intermediate German with the help of a dictionary.<br>●The goal is to be able to express things around them in simple German, using what they learned in interactive practice.<br>●The goal is to have a deeper understanding of the German way of thinking and lifestyle by reading German reading materials on social conditions. |             |  |                                    |   |  |  |
| Rubric   |             |  |                                    |   |  |  |
|  |             | Ideal Level  |                                    | Standard Level  |  | Unacceptable Level   |
| Achievement 1  |             | Clearly understand German sentence structure and rules, and can read intermediate German with the help of a dictionary.  |                                    | Clearly understand German sentence structure and rules, and can read intermediate German to some extent with the help of a dictionary.                        |  | Do not clearly understand German sentence structure and rules, and cannot read intermediate German even with the help of a dictionary.       |
| Achievement 2  |             | Can express things around them in German, using what they learned in interactive practice.   |                                    | Can express things around them in simple German, using what they learned  |  | Cannot express things around them in simple German.  |
| Achievement 3  |             | Can deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions.  |                                    | Can deepen their understanding of the German way of thinking and lifestyle to a certain extent through reading German reading materials on social conditions. |  | Cannot deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions. |
| Assigned Department Objectives   |             |  |                                    |   |  |  |
| Teaching Method  |             |  |                                    |   |  |  |
| Outline  |             | The main purpose of this class is to learn the basic grammar of German and to balance students' overall German reading, writing, listening, and speaking abilities. When learning grammar, we will incorporate many interactive practice that use the grammar topics in each section will be incorporated so students can learn German that is practical and alive. In addition, students will improve their German reading comprehension and increase knowledge of Germany through reading materials on German social conditions. |                                    |   |  |  |
| Style  |             | In addition to classes, a lot of interactive practice will be incorporated, and students will also improve reading comprehension through readings.<br>Liaison: Akimoto Hiromi  |                                    |   |  |  |
| Notice   |             | (1) During the first class, a few dictionaries will be introduced. Students should choose a dictionary from those that they think will be easy to use and bring it to the class every time. (2) Properly do the assignments given.<br>Students who miss 1/4 or more of classes will not be eligible for evaluation.  |                                    |   |  |  |
| Characteristics of Class / Division in Learning  |             |  |                                    |   |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |                                    | <input checked="" type="checkbox"/> Applicable to Remote Class  |  | <input type="checkbox"/> Instructor Professionally Experienced   |
|  |             |  |                                    |   |  |  |
| Course Plan  |             |  |                                    |   |  |  |
|  |             |  | Theme                              |   | Goals  |  |
| 1st Semester   | 1st Quarter | 1st  | Introduction to German and Germany |   | Understand the alphabet and pronunciation rules.                 |  |
|  |             | 2nd  | Introduction to German and Germany |   | Understand pronunciation rules and greeting expressions.         |  |
|  |             | 3rd  | Lektion 1                          |   | Grammar: Understand present tense personal conjugation of verbs. |  |
|  |             | 4th  | Lektion 1                          |   | Grammar: Understand German word order.                           |  |
|  |             | 5th  | Lektion 1                          |   | Reading: Understand Japan inside Germany.                        |  |
|  |             | 6th  | Lektion 1                          |   | Grammar: Understand sein and haben.                              |  |
|  |             | 7th  | Lektion 2                          |   | Grammar: Understand the gender and number of nouns.              |  |
|  |             | 8th  | Lektion 2                          |   | Reading: Understand German beer and wine.                        |  |
|  | 2nd Quarter | 9th  | Lektion 2                          |   | Grammar: Understand case inflections of articles and nouns.      |  |
|  |             | 10th   | Lektion 3                          |   | Reading: Understand Berlin                                       |  |
|  |             | 11th   | Lektion 3                          |   | Grammar: Understand irregular verbs and the imperative mood.     |  |
|  |             | 12th   | Lektion 4                          |   | Grammar: Understand Europe and the EU.                           |  |
|  |             | 13th   | Lektion 4                          |   | Grammar: Understand definite and indefinite articles.            |  |

|                                  |             |              |                                     |   |           |        |       |
|----------------------------------|-------------|--------------|-------------------------------------|---|-----------|--------|-------|
|                                  |             | 14th         | Lektion 5                           | Reading: Understand the part-time jobs of German youth. |           |        |       |
|                                  |             | 15th         | Review                              | Review the content learned in the first semester.       |           |        |       |
|                                  |             | 16th         | Final exam                          | Understand the content learned.                         |           |        |       |
| Evaluation Method and Weight (%) |             |              |                                     |   |           |        |       |
|                                  | Examination | Presentation | Mutual Evaluations between students | Behavior  | Portfolio | Quizes | Total |
| Subtotal                         | 50          | 0            | 0                                   | 30  | 0         | 20     | 100   |
| Basic Proficiency                | 50          | 0            | 0                                   | 30  | 0         | 20     | 100   |
| Specialized Proficiency          | 0           | 0            | 0                                   | 0   | 0         | 0      | 0     |
| Cross Area Proficiency           | 0           | 0            | 0                                   | 0   | 0         | 0      | 0     |

|  |  |                                       |   |  |  |
|--|--|---------------------------------------|---|--|--|
| Akashi College   |  | Year                                  | 2023  | Course Title   | German-2   |
| Course Information   |  |                                       |   |  |  |
| Course Code  | 5411   |                                       | Course Category   | General / Elective   |  |
| Class Format   | Lecture  |                                       | Credits   | School Credit: 1   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade   | 4th  |  |
| Term   | Second Semester  |                                       | Classes per Week  | 2  |  |
| Textbook and/or Teaching Materials   | DVDわかるぞドイツ語！見えるぞドイツ語！ 春日正男、松澤淳（朝日出版社）  |                                       |   |  |  |
| Instructor   | YOKOTA Kazuya  |                                       |   |  |  |
| Course Objectives  |  |                                       |   |  |  |
| <ul style="list-style-type: none"> <li>•The goal is to clearly understand German sentence structure and rules, and to be able to read intermediate German with the help of a dictionary.</li> <li>•The goal is to be able to express things around them in simple German, using what they learned in interactive practice.</li> <li>•The goal is to have a deeper understanding of the German way of thinking and lifestyle by reading German reading materials on social conditions.</li> </ul> |  |                                       |   |  |  |
| Rubric   |  |                                       |   |  |  |
|  | Ideal Level  |                                       | Standard Level  |  | Unacceptable Level   |
| Achievement 1  | Clearly understand German sentence structure and rules, and can read intermediate German with the help of a dictionary.  |                                       | Clearly understand German sentence structure and rules, and can read intermediate German to some extent with the help of a dictionary.                        |  | Do not clearly understand German sentence structure and rules, and cannot read intermediate German even with the help of a dictionary.       |
| Achievement 2  | Can express things around them in German, using what they learned in interactive practice.   |                                       | Can express things around them in simple German, using what they learned  |  | Cannot express things around them in simple German.  |
| Achievement 3  | Can deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions.  |                                       | Can deepen their understanding of the German way of thinking and lifestyle to a certain extent through reading German reading materials on social conditions. |  | Cannot deepen their understanding of the German way of thinking and lifestyle through reading German reading materials on social conditions. |
| Assigned Department Objectives   |  |                                       |   |  |  |
| Teaching Method  |  |                                       |   |  |  |
| Outline  | The main purpose of this class is to learn the basic grammar of German and to balance students' overall German reading, writing, listening, and speaking abilities. When learning grammar, we will incorporate many interactive practice that use the grammar topics in each section will be incorporated so students can learn German that is practical and alive. In addition, students will improve their German reading comprehension and increase knowledge of Germany through reading materials on German social conditions. |                                       |   |  |  |
| Style  | In addition to classes, a lot of interactive practice will be incorporated, and students will also improve reading comprehension through readings.<br>Liaison: Akimoto Hiromi  |                                       |   |  |  |
| Notice   | (1) During the first class, a few dictionaries will be introduced. Students should choose a dictionary from those that they think will be easy to use and bring it to the class every time. (2) Properly do the assignments given.<br>Students who miss 1/4 or more of classes will not be eligible for evaluation.  |                                       |   |  |  |
| Characteristics of Class / Division in Learning  |  |                                       |   |  |  |
| <input type="checkbox"/> Active Learning   |  | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class     | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |                                       |   |  |  |
|  |  |                                       | Theme   | Goals  |  |
| 2nd Semester   | 3rd Quarter  | 1st                                   | Lektion 5   | Grammar: Understand personal pronouns.                             |  |
|  |  | 2nd                                   | Lektion 5   | Grammar: Understand prepositions.                                  |  |
|  |  | 3rd                                   | Lektion 6   | Reading: Understand German bakeries.                               |  |
|  |  | 4th                                   | Lektion 6   | Grammar: Understand modal verbs and the future tense.              |  |
|  |  | 5th                                   | Lektion 6   | Grammar: Understand subordinating conjunctions.                    |  |
|  |  | 6th                                   | Lektion 7   | Reading: Understand the travel situation in Germany.               |  |
|  |  | 7th                                   | Lektion 7   | Grammar: Understand separable verbs.                               |  |
|  |  | 8th                                   | Lektion 7   | Grammar: Understand reflexive verbs.                               |  |
|  | 4th Quarter  | 9th                                   | Lektion 8   | Reading: Understand Munich.  |  |
|  |  | 10th                                  | Lektion 8   | Grammar: Understand case inflections of adjectives.                |  |
|  |  | 11th                                  | Lektion 9   | Reading: Understand Oktoberfest in Munich.                         |  |
|  |  | 12th                                  | Lektion 9   | Grammar: Understand the three basic forms and past tense of verbs. |  |
|  |  | 13th                                  | Lektion 10  | Reading: Understand the football situation in Germany.             |  |
|  |  | 14th                                  | Lektion 10  | Grammar: Understand the perfect tense.                             |  |

|                                  |             |              |                                     |  |           |        |       |
|----------------------------------|-------------|--------------|-------------------------------------|--|-----------|--------|-------|
|                                  |             | 15th         | Review                              | Review the content learned in the second semester. |           |        |       |
|                                  |             | 16th         | Final exam                          | Understand the content learned.                    |           |        |       |
| Evaluation Method and Weight (%) |             |              |                                     |  |           |        |       |
|                                  | Examination | Presentation | Mutual Evaluations between students | Behavior   | Portfolio | Quizes | Total |
| Subtotal                         | 50          | 0            | 0                                   | 30   | 0         | 20     | 100   |
| Basic Proficiency                | 50          | 0            | 0                                   | 30   | 0         | 20     | 100   |
| Specialized Proficiency          | 0           | 0            | 0                                   | 0  | 0         | 0      | 0     |
| Cross Area Proficiency           | 0           | 0            | 0                                   | 0  | 0         | 0      | 0     |

|  |   |                                       |   |   |  |
|--|---|---------------------------------------|---|---|--|
| Akashi College   |   | Year                                  | 2023  | Course Title  | French-1   |
| Course Information   |   |                                       |   |   |  |
| Course Code  | 5412  |                                       | Course Category   | General / Elective  |  |
| Class Format   | Lecture   |                                       | Credits   | School Credit: 1  |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade   | 4th   |  |
| Term   | First Semester  |                                       | Classes per Week  | 2   |  |
| Textbook and/or Teaching Materials   | 釣馨・武内英公子『私だけのフランス語ノート』朝日出版社   |                                       |   |   |  |
| Instructor   | FUJIMOTO Tomonari   |                                       |   |   |  |
| Course Objectives  |   |                                       |   |   |  |
| In the recent trend of globalization, the multilingualism and multiculturalism perspectives have become increasingly important. Internationalization does not make the world uniform, but it requires diverse cultures to co-exist. From the perspective that the best way to learn different cultures is to learn languages, we will become familiar with taking action for a multicultural and multilingual coexistence society through French learning. |   |                                       |   |   |  |
| Rubric   |   |                                       |   |   |  |
|  | 理想的な到達レベルの目安  |                                       | 標準的な到達レベルの目安  |   | 未到達レベルの目安  |
| 評価項目1  | Learn the basic French proficiency by learning the French language structure.   |                                       | Learn the basic French proficiency by learning the French language structure.                       |   | Do not learn the basic French proficiency by learning the French language structure.                 |
| 評価項目2  | Learn the basic French proficiency by learning French vocabulary.   |                                       | Learn the basic French proficiency by learning French vocabulary.                                   |   | Do not learn the basic French proficiency by learning French vocabulary.                             |
| 評価項目3  | Can take action for a multicultural and multilingual coexistence society through learning French.   |                                       | Can take action for a multicultural and multilingual coexistence society through learning French.   |   | Cannot take action for a multicultural and multilingual coexistence society through learning French. |
| Assigned Department Objectives   |   |                                       |   |   |  |
| Teaching Method  |   |                                       |   |   |  |
| Outline  | In this course, students will learn the basics of French communication. The French language structure, or so-called grammar, have many rules, and it seems complicated at first glance, such as the relationship between spelling and pronunciation, the rules on the gender of nouns, and the verb conjugation. However, if you become master them to some extent, your horizon will suddenly broaden, and you can communicate fairly well with a few vocabularies. While learning the basic expressions of everyday conversation, such as how to introduce yourself and seasonal greetings, the class aims to help students achieve a balanced mastering of the four skills: listening, speaking, reading, and writing. |                                       |   |   |  |
| Style  | After explanation of the grammar and vocabulary, students will do practice questions to acquire proficiency. Liaison: Chiho Kitagawa  |                                       |   |   |  |
| Notice   | In order to learn foreign languages, it's important to make the most of the innate communication skills and imagination of the learners, so active participation in classes is required. Also, students are encouraged to spend more time for review rather than for pre-study.<br>Students who miss 1/4 or more of classes will not be eligible for evaluation.  |                                       |   |   |  |
| Characteristics of Class / Division in Learning  |   |                                       |   |   |  |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class  | <input type="checkbox"/> Instructor Professionally Experienced                                       |
| Course Plan  |   |                                       |   |   |  |
|  |   |                                       | Theme   | Goals   |  |
| 1st Semester   | 1st Quarter   | 1st                                   | Guidance: How classes will be conducted / General explanations about France and the French language | Understand the overview of classes. Understand the general characteristics of France and the French language. |  |
|  |   | 2nd                                   | Lesson 0: L'alphabet and pronunciation / Greeting   | Pronounce French words and greet.   |  |
|  |   | 3rd                                   | Lesson 0: L'alphabet and pronunciation / Greeting   | Use numbers from 1 to 10.   |  |
|  |   | 4th                                   | Lesson 1: Let's introduce yourself!   | Make simple verb conjugation. Say names of European countries and cities in French.                           |  |
|  |   | 5th                                   | Lesson 1: Let's introduce yourself!   | Introduce themselves in French.   |  |
|  |   | 6th                                   | Lesson 2: Let's talk about nationalities and languages!   | Understand the basic rules of the gender of nouns.  |  |
|  |   | 7th                                   | Lesson 2: Let's talk about nationalities and languages!   | Listen to names, nationalities, towns, occupations, and words of others.                                      |  |
|  |   | 8th                                   | Review  | Understanding the weak points on the content learned so far.  |  |
|  | 2nd Quarter   | 9th                                   | Lesson 3: Let's talk about things around you!   | Increase their vocabulary and talk about things around them.  |  |
|  |   | 10th                                  | Lesson 3: Let's talk about things around you!   | Use numbers up to 20. Say regions of France and its specialties.  |  |
|  |   | 11th                                  | Lesson 4: Let's talk about your family! (1)   | Use numbers up to 69. Use the verbs avoir and faire.  |  |
|  |   | 12th                                  | Lesson 4: Let's talk about your family! (1)   | Talk about the ages and occupations of their and other people's family members.                               |  |
|  |   | 13th                                  | Lesson 5: Let's talk about your family! (2)   | Talk about the characteristics and personalities of their family members.                                     |  |
|  |   | 14th                                  | Lesson 5: Let's talk about your family! (2)   | Explain clothes.  |  |

|                                  |    |      |   |    |  |     |       |
|----------------------------------|----|------|---|----|--|-----|-------|
|                                  |    | 15th | Lesson 6: Let's talk about things you like! |    | Talk about things they like.                               |     |       |
|                                  |    | 16th | Final exam                                  |    | Speak and write based on the content learned since week 9. |     |       |
| Evaluation Method and Weight (%) |    |      |   |    |  |     |       |
|                                  | 試験 | 発表   | 相互評価  | 態度 | ポートフォリオ  | その他 | Total |
| Subtotal                         | 50 | 0    | 0   | 30 | 0  | 20  | 100   |
| 基礎的能力                            | 50 | 0    | 0   | 30 | 0  | 20  | 100   |
| 専門的能力                            | 0  | 0    | 0   | 0  | 0  | 0   | 0     |
| 分野横断的能力                          | 0  | 0    | 0   | 0  | 0  | 0   | 0     |

|  |             |   |   |  |                    |  |
|--|-------------|---|---|--|--------------------|--|
| Akashi College   |             | Year  | 2023  |  | Course Title       | French-2   |
| Course Information   |             |   |   |  |                    |  |
| Course Code  |             | 5413  |   | Course Category  | General / Elective |  |
| Class Format   |             | Lecture   |   | Credits  | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |   | Student Grade  | 4th                |  |
| Term   |             | Second Semester   |   | Classes per Week   | 2                  |  |
| Textbook and/or Teaching Materials   |             | 釣馨・武内英公子『私だけのフランス語ノート』朝日出版社   |   |  |                    |  |
| Instructor   |             | FUJIMOTO Tomonari   |   |  |                    |  |
| Course Objectives  |             |   |   |  |                    |  |
| This course aims to apply and expand on the "French -1" course offered in the previous semester. The specific objectives are: 1. to understand and pronounce simple French expressions; 2. to be able to conjugate regular and irregular verbs in the present tense (i.e., to change them according to their person); 3. to understand how expressions (articles, adjectives, etc.) change according to the number and gender of nouns; and 4. to be able to think about the meaning of simple sentences and to form simple sentences. |             |   |   |  |                    |  |
| Rubric   |             |   |   |  |                    |  |
|  |             | 理想的な到達レベルの目安  |   | 標準的な到達レベルの目安   |                    | 未到達レベルの目安  |
| 評価項目1  |             | Learn the basic French proficiency by learning the French language structure.   |   | Learn the basic French proficiency by learning the French language structure.                              |                    | Do not learn the basic French proficiency by learning the French language structure.                 |
| 評価項目2  |             | Learn the basic French proficiency by learning French vocabulary.   |   | Learn the basic French proficiency by learning French vocabulary.  |                    | Do not learn the basic French proficiency by learning French vocabulary.                             |
| 評価項目3  |             | Can take action for a multicultural and multilingual coexistence society through learning French.   |   | Can take action for a multicultural and multilingual coexistence society through learning French.          |                    | Cannot take action for a multicultural and multilingual coexistence society through learning French. |
| Assigned Department Objectives   |             |   |   |  |                    |  |
| Teaching Method  |             |   |   |  |                    |  |
| Outline  |             | While reviewing the contents of the first semester, students will learn grammatical items that are a little more advanced than those of the first semester. There is indeed a lot to memorize in elementary grammar, but since the contents of the second semester are based on the contents of the first semester, students should be able to gradually acquire proficiency by focusing on review. We expect the active participation of students. |   |  |                    |  |
| Style  |             | After explanation of the grammar and vocabulary, students will do practice questions to acquire proficiency. Liaison: Chiho Kitagawa  |   |  |                    |  |
| Notice   |             | In order to learn foreign languages, it's important to make the most of the innate communication skills and imagination of the learners, so active participation in classes is required. Also, students are encouraged to spend more time for review rather than for pre-study. Students who miss 1/4 or more of classes will not be eligible for evaluation.   |   |  |                    |  |
| Characteristics of Class / Division in Learning  |             |   |   |  |                    |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class   |                    | <input type="checkbox"/> Instructor Professionally Experienced                                       |
| Course Plan  |             |   |   |  |                    |  |
|  |             |   | Theme   | Goals  |                    |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st   | Review of the topics covered in the first semester, and warm up for the second semester | Can speak and write in French based on the content learned in the first semester.                          |                    |  |
|  |             | 2nd   | Lesson 7: Let's talk about food!  | Can talk about breakfast. Can use the verb prendre. Can explain French cuisine.                            |                    |  |
|  |             | 3rd   | Lesson 8: Let's go on a trip!   | Can talk about destinations. Can talk about transport options. Can use sentences in the near future tense. |                    |  |
|  |             | 4th   | Lesson 9: Let's talk about the weather!   | Can speak using weather expressions.   |                    |  |
|  |             | 5th   | Lesson 9: Let's say the time and duration!  | Can say the time and duration.   |                    |  |
|  |             | 6th   | Lesson 10: Let's compare.   | Can speak using comparison expressions.  |                    |  |
|  |             | 7th   | Lesson 11: Let's shop!  | Can use numbers up to 100. Can tell the total amount of shopping.  |                    |  |
|  |             | 8th   | Review  | Understanding the weak points on the content learned so far.   |                    |  |
|  | 4th Quarter | 9th   | Lesson 11: Let's ask the way!   | Can use command forms. Can give directions.  |                    |  |
|  |             | 10th  | Lesson 12: Let's explain what you do on a day!  | Can create sentences using pronominal verbs in the present tense.  |                    |  |
|  |             | 11th  | Lesson 12: Let's explain what you do on a day!  | Can talk about what they do on a normal day.   |                    |  |
|  |             | 12th  | Lesson 13: Let's talk about customs!  | Can talk about customs of the French people. Can use the verb pouvoir. Can use personal pronouns.          |                    |  |
|  |             | 13th  | Lesson 14: Let's talk about what you did during your trip! (1)                          | Understand how to form the perfect tense using avoir, and can use it.                                      |                    |  |
|  |             | 14th  | Lesson 15: Let's talk about what you did during your trip! (2)                          | Understand how to form the perfect tense and imperfect tense using être, and can use them                  |                    |  |
|  |             | 15th  | Summary of Lessons 14 and 15  | Can talk about what they did yesterday based on what they do on a normal day learned in Lesson 12.         |                    |  |



|                                  |    |      |            |    |         |     |       |
|----------------------------------|----|------|------------|----|---------|-----|-------|
|                                  |    | 16th | Final exam |    |         |     |       |
| Evaluation Method and Weight (%) |    |      |            |    |         |     |       |
|                                  | 試験 | 発表   | 相互評価       | 態度 | ポートフォリオ | その他 | Total |
| Subtotal                         | 50 | 0    | 0          | 30 | 0       | 20  | 100   |
| 基礎的能力                            | 50 | 0    | 0          | 30 | 0       | 20  | 100   |
| 専門的能力                            | 0  | 0    | 0          | 0  | 0       | 0   | 0     |
| 分野横断的能力                          | 0  | 0    | 0          | 0  | 0       | 0   | 0     |

|  |             |  |   |  |                     |  |
|--|-------------|--|---|--|---------------------|--|
| Akashi College   |             | Year   | 2023  |  | Course Title        | Mathematical Concepts  |
| Course Information   |             |  |   |  |                     |  |
| Course Code  |             | 5414   |   | Course Category  | General / Elective  |  |
| Class Format   |             | Lecture  |   | Credits  | School Credit: 1    |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  | 4th                 |  |
| Term   |             | Second Semester  |   | Classes per Week   | 2                   |  |
| Textbook and/or Teaching Materials   |             | 碓氷久ほか 大学編入のための数学問題集 大日本図書  |   |  |                     |  |
| Instructor   |             | MATSUMIYA Atusi  |   |  |                     |  |
| Course Objectives  |             |  |   |  |                     |  |
| ( 1 ) 確率の諸概念を理解し、確実な計算を身に着け、いろいろな問題をこなせるようになること。<br>( 2 ) 線型代数の諸概念を理解し、行列やベクトルに関する確実な計算を身につけ、いろいろな問題をこなせるようになること。<br>( 3 ) 微積分の諸概念を理解し、確実な計算を身につけ、いろいろな問題をこなせるようになること。<br>( 4 ) 抽象的枠組を具体的問題に適用する能力を獲得し、適切な試験答案の作りかたを身につけること。 |             |  |   |  |                     |  |
| 以上いずれについても、各回の小試験と期末試験により達成度をはかる。  |             |  |   |  |                     |  |
| Rubric   |             |  |   |  |                     |  |
|  |             | 理想的な到達レベルの目安   |   | 標準的な到達レベルの目安   |                     | 未到達レベルの目安  |
| 評価項目1  |             | 確率の諸概念を十分理解し、確実な計算を身につけ、いろいろな問題を十分解くことが出来る。  |   | 確率の諸概念を理解し、確実な計算を身につけいろいろな問題を解くことが出来る。                         |                     | 確率の諸概念を理解できず、確実な計算を身につけていないのでいろいろな問題を解くことが出来ない。                |
| 評価項目2  |             | 線型代数の諸概念を十分理解し、行列やベクトルに関する確実な計算を身につけいろいろな問題を十分解くことが出来る。  |   | 線型代数の諸概念を理解し、行列やベクトルに関する確実な計算を身につけいろいろな問題を解くことが出来る。            |                     | 線型代数の諸概念を理解できず、行列やベクトルに関する確実な計算を身につけいろいろな問題を解くことが出来ない。         |
| 評価項目3  |             | 微積分の諸概念を十分理解し、確実な計算を身につけいろいろな問題を十分解くことが出来る。  |   | 微積分の諸概念を理解し、確実な計算を身につけいろいろな問題を解くことが出来る。                        |                     | 微積分の諸概念を理解できず、確実な計算を身につけていないのでいろいろな問題を解くことが出来ない。               |
| 評価項目4  |             | 抽象的枠組を具体的問題に適用する能力を十分獲得している。   |   | 抽象的枠組を具体的問題に適用する能力を獲得している。                                     |                     | 抽象的枠組を具体的問題に適用する能力を獲得出来ない。                                     |
| Assigned Department Objectives   |             |  |   |  |                     |  |
| Teaching Method  |             |  |   |  |                     |  |
| Outline  |             | 高専で学習した数学に初歩の確率論の学習を含め、これらに関して復習と問題演習を行う。多くの問題を解くことによって数学的能力を高め、さらに高度な数学に親しめる能力を身につけることを目標とする。付随的に、大学編入試験に臨む学生の受験対策の機会にもなるようにしたい。                        |   |  |                     |  |
| Style  |             | 課題提出をもとに、講義や質問を行い確認小試験を行う。   |   |  |                     |  |
| Notice   |             | テキストは大学編入試験の問題集で、豊富な問題量を含んでいる。自分が必要となる範囲を自分自身で見定めて調べるように心がけ、講義の進行とは別に各自でどんどん学習を進めていくべきである。受け身の受講姿勢では編入試験対策として有効にはならないので注意。<br>合格の対象としない欠席条件(割合) 1/3以上の欠課 |   |  |                     |  |
| Characteristics of Class / Division in Learning  |             |  |   |  |                     |  |
| <input checked="" type="checkbox"/> Active Learning  |             | <input checked="" type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class |                     | <input type="checkbox"/> Instructor Professionally Experienced |
|  |             |  |   |  |                     |  |
| Course Plan  |             |  |   |  |                     |  |
|  |             |  | Theme   |  | Goals               |  |
| 2nd Semester   | 3rd Quarter | 1st  | 基礎数学の復習 1<br>1年次に学習した数学Aの内容について、復習と問題演習をおこなう。             |  | 基礎数学の内容を理解している。     |  |
|  |             | 2nd  | 基礎数学の復習 2<br>1年次に学習した数学Bの内容について、復習と問題演習をおこなう。             |  | 基礎数学の内容を理解している。     |  |
|  |             | 3rd  | 一変数関数の微分<br>一変数関数の微分について、復習と問題演習をおこなう。                    |  | 1変数関数の微分について理解している。 |  |
|  |             | 4th  | 一変数関数の積分<br>一変数関数の積分について、復習と問題演習をおこなう。                    |  | 1変数関数の積分について理解している。 |  |
|  |             | 5th  | 関数の展開<br>数列の極限、級数とべき級数、テイラーの定理とテイラー展開について、復習と問題演習をおこなう。   |  | 関数の展開について理解している。    |  |
|  |             | 6th  | 多変数関数の微積分 (1)<br>主として二変数関数の、偏微分、極値の判定について復習し、問題演習をおこなう。   |  | 多変数関数の微分について理解している。 |  |
|  |             | 7th  | 多変数関数の微積分 (2)<br>主として二変数関数の重積分について、計算法と利用法を復習し、問題演習をおこなう。 |  | 多変数関数の積分について理解している。 |  |
|  |             | 8th  | 課題<br>課題に取り組み補強すべき分野を確認する。                                |  | 適切な試験答案の作り方を身につける。  |  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  | 4th Quarter | 9th  | 微分方程式<br>一階、二階の微分方程式の基本的な型についての解法を復習し、問題演習をおこなう。また基本的な型からやや外れるような問題や、連立微分方程式などを取りあげ、問題演習をおこなう。 | 簡単な1階線形微分方程式を解くことができる。定数係数2階斉次線形微分方程式を解くことができる。   |
|  |             | 10th | ベクトル<br>空間内の図形、線形独立・線形従属などの復習と問題演習をおこなう。   | ベクトルに関する問題を解くことができる。  |
|  |             | 11th | 行列と行列式<br>行列と行列式の計算、階数、連立方程式、逆行列、連立一次方程式の解法などの復習と問題演習をおこなう。                                    | 行列に関する問題を解くことができる。  |
|  |             | 12th | 線形変換<br>線形変換とその表現行列、行列の固有値と固有ベクトル、行列の対角化について、復習と問題演習をおこなう。                                     | 線形変換、固有値と固有ベクトルに関する問題を解くことができる。   |
|  |             | 13th | ベクトル空間<br>ベクトル空間、部分空間、基底・次元、線形写像について、やや抽象的な問題の復習と演習をおこなう。                                      | ベクトル空間、部分空間、基底・次元、線形写像に関する問題を解くことができる。  |
|  |             | 14th | 確率 古典的確率概念と具体的問題<br>素朴な確率概念と、条件付き確率や期待値などの概念を学び、具体的な問題の例を取りあげる。                                | 独立試行の確率、余事象の確率、確率の加法定理、排反事象の確率を理解し、簡単な場合について、確率を求めることができる。条件付き確率、確率の乗法定理、独立事象の確率を理解し、簡単な場合について確率を求めることができる。 |
|  |             | 15th | さまざまな複合的問題<br>複数の分野にまたがる知識を必要とする問題をいくつかとりあげ、問題演習をおこなう。   | 適切な試験答案の作りかたを身につけている。   |
|  |             | 16th | 期末試験   |   |

#### Evaluation Method and Weight (%)

|          | 試験 | 発表 | 相互評価 | 態度 | ポートフォリオ | その他 | Total |
|----------|----|----|------|----|---------|-----|-------|
| Subtotal | 50 | 0  | 0    | 0  | 0       | 50  | 100   |
| 基礎的能力    | 50 | 0  | 0    | 0  | 0       | 50  | 100   |
| 専門的能力    | 0  | 0  | 0    | 0  | 0       | 0   | 0     |
| 分野横断的能力  | 0  | 0  | 0    | 0  | 0       | 0   | 0     |

|   |   |  |   |  |  |
|---|---|--|---|--|--|
| Akashi College  |   | Year   | 2023  | Course Title   | Overseas Training II   |
| Course Information  |   |  |   |  |  |
| Course Code   | 5415  |  | Course Category   | General / Elective   |  |
| Class Format  | Practical training  |  | Credits   | School Credit: 1   |  |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade   | 4th  |  |
| Term  | Year-round  |  | Classes per Week  | 1  |  |
| Textbook and/or Teaching Materials  |   |  |   |  |  |
| Instructor  | All faculty of the department   |  |   |  |  |
| Course Objectives   |   |  |   |  |  |
| (1) Can make efforts to increase knowledge and skills through participating in training overseas. |   |  |   |  |  |
| (2) Can develop a broad perspective by participating in training in different cultures.           |   |  |   |  |  |
| (3) Can communicate with people involved in the local area using English, etc.                    |   |  |   |  |  |
| Rubric  |   |  |   |  |  |
|   | Ideal Level   |  | Standard Level  |  | Unacceptable Level   |
| Achievement 1   | Can fully make efforts to increase knowledge and skills through participating in training overseas.   |  | Can make efforts to increase knowledge and skills through participating in training overseas. |  | Cannot make efforts to increase knowledge and skills through participating in training overseas. |
| Achievement 2   | Can fully develop a broad perspective successfully by participating in training in different cultures.  |  | Can develop a broad perspective by participating in training in different cultures.           |  | Cannot develop a broad perspective by participating in training in different cultures.           |
| Achievement 3   | Can fully communicate with people involved in the local area smoothly using English, etc.   |  | Can communicate with people involved in the local area using English, etc.                    |  | Cannot communicate with people involved in the local area using English, etc.                    |
| Assigned Department Objectives  |   |  |   |  |  |
| Teaching Method   |   |  |   |  |  |
| Outline   | The objectives of this course are to develop the ability to think things from various perspectives and to communicate through a variety of training experiences overseas. The training can be carried out during summer vacation, etc. The number of days for the training must be more than five days. This course's content will amount to over 45 hours in total. These hours include training overseas, preliminary guidance (manner lesson, preliminary research on the training destination), debrief session, and self-study time for preparing reports to be submitted to relevant institutions, etc. |  |   |  |  |
| Style   | Pre-orientation, on-site training, and debriefing   |  |   |  |  |
| Notice  | Students are required to keep in close contact with their class teacher or supervisor. During the training, students are required to actively engage and communicate with the local people and act appropriately as a trainee, including their clothing and language.<br>No conditions for missing classes that will not be eligible for a passing grade.   |  |   |  |  |
| Characteristics of Class / Division in Learning   |   |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning   |   | <input checked="" type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced                                   |
| Course Plan   |   |  |   |  |  |
|   |   |  | Theme   | Goals  |  |
| 1st Semester  | 1st Quarter   | 1st  |   |  |  |
|   |   | 2nd  |   |  |  |
|   |   | 3rd  |   |  |  |
|   |   | 4th  |   |  |  |
|   |   | 5th  |   |  |  |
|   |   | 6th  |   |  |  |
|   |   | 7th  |   |  |  |
|   |   | 8th  |   |  |  |
|   | 2nd Quarter   | 9th  |   |  |  |
|   |   | 10th   |   |  |  |
|   |   | 11th   |   |  |  |
|   |   | 12th   |   |  |  |
|   |   | 13th   |   |  |  |
|   |   | 14th   |   |  |  |
|   |   | 15th   |   |  |  |
|   |   | 16th   | No final exam   |  |  |
| 2nd Semester  | 3rd Quarter   | 1st  |   |  |  |
|   |   | 2nd  |   |  |  |
|   |   | 3rd  |   |  |  |
|   |   | 4th  |   |  |  |
|   |   | 5th  |   |  |  |
|   |   | 6th  |   |  |  |
|   |   | 7th  |   |  |  |

|  |                |      |               |  |
|--|----------------|------|---------------|--|
|  | 4th<br>Quarter | 8th  |               |  |
|  |                | 9th  |               |  |
|  |                | 10th |               |  |
|  |                | 11th |               |  |
|  |                | 12th |               |  |
|  |                | 13th |               |  |
|  |                | 14th |               |  |
|  |                | 15th |               |  |
|  |                | 16th | No final exam |  |

| Evaluation Method and Weight (%) |        |              |       |
|----------------------------------|--------|--------------|-------|
|                                  | Report | Presentation | Total |
| Subtotal                         | 50     | 50           | 100   |
| Basic Proficiency                | 0      | 0            | 0     |
| Specialized Proficiency          | 0      | 0            | 0     |
| Cross Area Proficiency           | 50     | 50           | 100   |

|  |  |                                       |  |  |   |
|--|--|---------------------------------------|--|--|---|
| Akashi College   |  | Year                                  | 2023   | Course Title   | Japanese IV-1   |
| Course Information   |  |                                       |  |  |   |
| Course Code  | 5416   |                                       |  | Course Category  | General / Compulsory                                    |
| Class Format   | Lecture  |                                       |  | Credits  | School Credit: 1  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       |  | Student Grade  | 4th   |
| Term   | First Semester   |                                       |  | Classes per Week   | 2   |
| Textbook and/or Teaching Materials   | 担当者がプリントを配布する。＜参考教材＞鎌田美千子・仁科浩美著『アカデミック・ライティングのためのパラフレーズ演習』（スリーエーネットワーク）、浜田麻里ほか著『大学生と留学生のための論文ワークブック』（くろしお出版) |                                       |  |  |   |
| Instructor   | KUBOTA Ikumi   |                                       |  |  |   |
| Course Objectives  |  |                                       |  |  |   |
| 1. 適切で効果的なことばを使い、身近な話題をテーマにして論文が書ける。<br>2. クラスメートとのアイデア共有や意見交換をとおして、自分の日本語力や考え方を見直すことができる。 |  |                                       |  |  |   |
| Rubric   |  |                                       |  |  |   |
|  | 理想的な到達レベルの目安   |                                       | 標準的な到達レベルの目安                                       |  | 未到達レベルの目安   |
| 評価項目1  | 論理的な文章の組み立て方やことばのルールを理解し、また適切に使いこなし、論文が書ける。  |                                       | 文章の組み立て方やことばの使い方に不自然な点はあるが、理解はしており、ある程度論理的に文章が書ける。 |  | 論理的な文章の組み立て方やことばのルールがあまり理解できず、論理的な文章が書けない。              |
| 評価項目2  | クラスメートとの言語活動に参加し、自分の日本語や考えを見直すだけでなく、相手にもコメントや助言をすることができる。  |                                       | クラスメートとの言語活動に参加し、自分の日本語や考えを見直すことができる。              |  | クラスメートとの言語活動にあまり参加できない。または、参加できるが、自分の日本語や考えを見直すことができない。 |
| Assigned Department Objectives   |  |                                       |  |  |   |
| Teaching Method  |  |                                       |  |  |   |
| Outline  | 本授業では、アカデミック・ライティングに必要な言語表現を学び、学術的な文章が書けるようになるための日本語力を養う。  |                                       |  |  |   |
| Style  | 学術的な文章に触れるとともに、論文の構成を意識しながら実際に文章を書く練習を重ねる。また、さまざまなパラフレーズをとおして、アカデミック・ライティングに必要な言語表現が適切に使えるようになるための練習を行う。     |                                       |  |  |   |
| Notice   | 評価の対象としない欠席条件(割合) 1/4以上の欠課   |                                       |  |  |   |
| Characteristics of Class / Division in Learning  |  |                                       |  |  |   |
| <input checked="" type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class |   |
|  |  |                                       |  | <input type="checkbox"/> Instructor Professionally Experienced |   |
| Course Plan  |  |                                       |  |  |   |
|  |  |                                       | Theme  | Goals  |   |
| 1st Semester   | 1st Quarter  | 1st                                   | オリエンテーション  | 授業の目標および内容を把握する。   |   |
|  |  | 2nd                                   | イントロダクション<br>単語の言い換え（書き言葉）                         | 論文を書くときに気をつけるべきことがわかる。自分が授業で扱いたいテーマについて考えることができる。              |   |
|  |  | 3rd                                   | 論文の構成<br>単語の言い換え（和語と漢語）                            | どのように論文を構成したらわかりやすい論文になるかがわかる。                                 |   |
|  |  | 4th                                   | 本論のまとめ方<br>単語の言い換え（名詞化）                            | 本論のまとめ方がわかり、与えられたテーマについて実際に論文の構成を考え、書いてみるができる。                 |   |
|  |  | 5th                                   | 文の種類<br>単語の言い換え（ジャンルによる使い分け）                       | 事実、意見、行動を述べる文それぞれの特徴と、どの構成要素に使われる文であるかがわかる。そのうえで、短い論文が書ける。     |   |
|  |  | 6th                                   | 序論（背景説明）   | 論文の背景説明を行う方法がわかり、与えられたテーマについて実際に書いてみるができる。                     |   |
|  |  | 7th                                   | 序論（問題提起と方向付け）<br>意味の言い換え（長い文／複数の文）                 | 与えられた読み物から問題点が見つけれられる。また、その問題をどのように解決しようとするのかという計画が示せる。        |   |
|  |  | 8th                                   | 序論<br>意味の言い換え（上位概念）                                | 身近なテーマについて論文の序論が書ける。   |   |
|  | 2nd Quarter  | 9th                                   | 本論（論拠提示）<br>意味の言い換え（簡潔な表現）                         | 事実と意見の違いがわかり、両者を書き分けることができる。                                   |   |
|  |  | 10th                                  | 本論（論拠提示）<br>意味の言い換え（含意／解釈）                         | 客観的な表現を使って事実が説明できる。  |   |
|  |  | 11th                                  | 本論（結論提示）   | 論拠を受けて論理的に導いた意見が書ける。   |   |
|  |  | 12th                                  | 本論（論の展開）   | 論文の例を読み、その中の論がどのように展開されているかがわかる。                               |   |
|  |  | 13th                                  | 本論   | あるテーマについて論文の本論が書ける。  |   |
|  |  | 14th                                  | 結び（まとめ、評価）   | 論文の全体のまとめの書き方がわかる。また、書きあがった論文に評価を加えることができる。                    |   |
|  |  | 15th                                  | 結び（展望提示）   | 結論から考えられる将来に向けての展望について言及できる。                                   |   |
|  |  | 16th                                  | まとめと振り返り   | 授業を通して新たに発見したこと、考えが変わったこと、さらには自分の日本語の能力と技能がどうなったかについて説明できる。    |   |
| Evaluation Method and Weight (%)   |  |                                       |  |  |   |

|          | 発表・成果物 | 課題提出 | 授業態度 | Total |
|----------|--------|------|------|-------|
| Subtotal | 70     | 10   | 20   | 100   |
| 基礎的能力    | 20     | 10   | 0    | 30    |
| 専門的能力    | 20     | 0    | 0    | 20    |
| 分野横断的能力  | 30     | 0    | 20   | 50    |

|  |             |   |                                    |  |  |   |  |
|--|-------------|---|------------------------------------|--|--|---|--|
| Akashi College   |             | Year  | 2023                               |  | Course Title   | Japanese IV-2   |  |
| Course Information   |             |   |                                    |  |  |   |  |
| Course Code  |             | 5417  |                                    | Course Category  |  | General / Compulsory  |  |
| Class Format   |             | Lecture   |                                    | Credits  |  | School Credit: 1  |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                    | Student Grade  |  | 4th   |  |
| Term   |             | Second Semester   |                                    | Classes per Week   |  | 2   |  |
| Textbook and/or Teaching Materials   |             | The teacher will make and distribute the handout.   |                                    |  |  |   |  |
| Instructor   |             | TANGE Atsuko  |                                    |  |  |   |  |
| Course Objectives  |             |   |                                    |  |  |   |  |
| 1. Can write a paper on a familiar topic using appropriate and effective words.<br>2. Can review your Japanese ability and way of thinking by sharing ideas and exchanging opinions with your classmates.<br>3. Can deepen your understanding of Japanese culture and express your thoughts. |             |   |                                    |  |  |   |  |
| Rubric   |             |   |                                    |  |  |   |  |
|  |             | Ideal Level   |                                    | Standard Level   |  | Unacceptable Level  |  |
| Achievement 1  |             | Understand how to construct logical sentences and rules of words, use them properly, and write a paper.   |                                    | There are some unnatural points in how to compose sentences and how to use words, but understand them and can write sentences logically. |  | Do not understand how to construct logical sentences and rules of words, and cannot write sentences logically.            |  |
| Achievement 2  |             | Can participate in activities with your classmates and not only review your Japanese and ideas, but also give comments and advice to the other person.  |                                    | Can participate in activities with classmates and review your Japanese and ideas.  |  | Cannot participate much in activities with classmates. Can participate, but cannot review your Japanese or your thoughts. |  |
| Achievement 3  |             | Can deepen your understanding of Japanese culture and express your thoughts using appropriate expressions.  |                                    | Can deepen your understanding of Japanese culture and express your thoughts.   |  | Cannot deepen your understanding of Japanese culture and express your thoughts.   |  |
| Assigned Department Objectives   |             |   |                                    |  |  |   |  |
| Teaching Method  |             |   |                                    |  |  |   |  |
| Outline  |             | We will focus on activities that allow us to write sentences suitable for academic writing. Also we will focus on deepen understanding of Japanese culture by exposing students to Japanese literature. |                                    |  |  |   |  |
| Style  |             | We will read various texts, write and present your opinions.  |                                    |  |  |   |  |
| Notice   |             | Students who miss 1/4 or more of classes will not be eligible for evaluation.   |                                    |  |  |   |  |
| Characteristics of Class / Division in Learning  |             |   |                                    |  |  |   |  |
| <input checked="" type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT   |                                    | <input checked="" type="checkbox"/> Applicable to Remote Class   |  | <input type="checkbox"/> Instructor Professionally Experienced  |  |
| Course Plan  |             |   |                                    |  |  |   |  |
|  |             |   | Theme                              |  | Goals  |   |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st   | Orientation                        |  | Understand the class objectives and content.   |   |  |
|  |             | 2nd   | Writing a paper ( 1 )              |  | Understand what to be careful of when writing a paper.   |   |  |
|  |             | 3rd   | Writing a paper ( 2 )              |  | Understand how to compose a paper to make it easy to understand.   |   |  |
|  |             | 4th   | Writing a paper ( 3 )              |  | Can write a paper using appropriate expressions.   |   |  |
|  |             | 5th   | Reading a paper ( 1 )              |  | Can understand and explain logical developments and arguments.   |   |  |
|  |             | 6th   | Reading a paper ( 2 )              |  | Can understand and explain logical developments and arguments.   |   |  |
|  |             | 7th   | Reading a paper ( 3 )              |  | Can give critical opinions on the content of the paper.  |   |  |
|  |             | 8th   | Reading Japanese novels ( 1 )      |  | Understand the development of the story, paying attention to the expression and structure.   |   |  |
|  | 4th Quarter | 9th   | Reading Japanese novels ( 2 )      |  | Understand the development of the story, paying attention to the expression and structure.   |   |  |
|  |             | 10th  | Reading Japanese novels ( 3 )      |  | Can express your opinion.  |   |  |
|  |             | 11th  | Reading Literature of Kansai ( 1 ) |  | Understand the development of the story, paying attention to the expression and structure.   |   |  |
|  |             | 12th  | Reading Literature of Kansai ( 2 ) |  | Understand the development of the story, paying attention to the expression and structure.   |   |  |
|  |             | 13th  | Reading Literature of Kansai ( 3 ) |  | Can express your opinion.  |   |  |
|  |             | 14th  | Reading Hyakunin Isshu (百人一首)      |  | Can explain about Hyakunin Isshu.  |   |  |
|  |             | 15th  | Reading Hyakunin Isshu (百人一首)      |  | Can express your opinion.  |   |  |
|  |             | 16th  | Reflection                         |  | Can explain new things you found out in class, things that changed their minds, and how your Japanese abilities and skills have developed. |   |  |
| Evaluation Method and Weight (%)   |             |   |                                    |  |  |   |  |



|                         | Presentation, Production<br>work | Submission of<br>assignments | Behavior | Total |
|-------------------------|----------------------------------|------------------------------|----------|-------|
| Subtotal                | 70                               | 10                           | 20       | 100   |
| Basic Proficiency       | 20                               | 10                           | 0        | 30    |
| Specialized Proficiency | 20                               | 0                            | 0        | 20    |
| Cross Area Proficiency  | 30                               | 0                            | 20       | 50    |

|   |   |  |  |  |  |
|---|---|--|--|--|--|
| Akashi College  |   | Year   | 2023   | Course Title   | C o + w o r k Ⅲ A  |
| Course Information  |   |  |  |  |  |
| Course Code   | 5418  |  | Course Category  | Specialized / Compulsory   |  |
| Class Format  | Seminar   |  | Credits  | School Credit: 1   |  |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade  | 4th  |  |
| Term  | First Semester  |  | Classes per Week   | 2  |  |
| Textbook and/or Teaching Materials  | 『Co+work book～3年間の記録』、Co+work学生ポータルサイト、その他、各チームの活動の内容に応じて適宜担当教員が用意する。   |  |  |  |  |
| Instructor  | All faculty   |  |  |  |  |
| Course Objectives   |   |  |  |  |  |
| 自律に関する到達目標：自己調整ができる。<br>協働に関する到達目標：他者を尊重しながらチームで作業ができる。<br>創造に関する到達目標：課題等を発見し新しい提案ができる。 |   |  |  |  |  |
| Rubric  |   |  |  |  |  |
|   | 理想的な到達レベルの目安  |  | 標準的な到達レベルの目安   |  | 未到達レベルの目安  |
| 自律に関する到達目標  | タイムマネジメントや必要に応じた報告・連絡・相談ができ、目標を立て振り返ることができる。これらを自分なりの判断と工夫を加え最善と思う行動をとる。  |  | タイムマネジメントや必要に応じた報告・連絡・相談ができ、目標を立て振り返ることができる。これらのことをやるべき時に行く。   |  | タイムマネジメントや必要に応じた報告・連絡・相談、目標を立て振り返ることの行動が伴わない。                                      |
| 協働に関する到達目標  | 他者の意見をしっかりと聞き、他者を受け入れつつ自己表現ができる。また、協働作業に貢献することができる。これらを自分なりの判断と工夫を加え最善と思う行動をとる。   |  | 他者の意見をしっかりと聞き、他者を受け入れつつ自己表現ができる。また、協働作業に貢献することができる。これらのことをやるべき時に行く。  |  | 他者の意見をしっかりと聞くこと、他者を受け入れつつ自己表現を行う行動が伴わない。また、協働作業に貢献する行動が伴わない。                       |
| 創造に関する到達目標  | 記録や収集した情報の意味づけを踏まえ、新しいものやしくみの提案をすることができる。また提案の及ぼす影響や範囲を特定できる。そして、これらを自分なりの判断と工夫を加え最善と思う行動をとる。   |  | 新しいものやしくみの提案をすることができる。また提案の及ぼす影響や範囲を特定できる。また、これらのことをやるべき時に行く。  |  | 記録や収集した情報の意味づけを踏まえ、新しくものやしくみの提案をすることができない。また提案の及ぼす影響や範囲を特定できない。また、新しい提案をする行動が伴わない。 |
| Assigned Department Objectives  |   |  |  |  |  |
| Teaching Method   |   |  |  |  |  |
| Outline   | 本授業は、2、3、4年生、4学科の学生を無作為に選んで構成された数名で編成されたチームで行うPBL型授業である。1人の教員が1チームもしくは2チームを担当する。多様な環境（他学科・他学年の学生との交わり、学外の人々との交わりなど）の中で、自律、協働、創造の能力を養成することを目的とする。受講生は、自らチーム内での役割を考えて行動しチームワーク力を発揮して、メンバーと協働しながら創造的な活動を行うことが求められる。活動テーマは、誰かを幸せにするもの（社会との関わりを持つ）、チームにとってのチャレンジを含むもの、SDGs（持続可能な開発目標）の17の目標につながるものとする。   |  |  |  |  |
| Style   | ルーブリックを参照しながら、各自で自己目標を立てる。そしてチーム内で自己紹介、アイスブレイクを通じてチーム内の人間関係を構築する。次にチームで、SDGs（持続可能な開発目標）の17の目標の目標の細分化項目の調査や把握を通じて、その理解を深める。それから話し合いを通じて、SDGsの目標につながるチームの活動テーマを確定し、活動計画書を作成する。第7週の計画発表会・意見交換会にてチームの活動テーマについて、プレゼンテーションを行い、他のチームの担当教員や学生からの助言を受ける。助言を受け、適宜チームで計画の修正を行う。その後はチームで協力、役割分担をしながら計画的に、提案やプロトタイプの作成、実践活動などを進める。毎週、授業の終わりにチームでふりかえりを行いチーム活動報告書を記入し担当教員に提出する。必要に応じて修正を加えながら次の目標を立てる。前期終了時には、担当教員と個別に自己評価や相互評価を踏まえたふりかえりを行う。 |  |  |  |  |
| Notice  | (1) 個人の取り組み 60%（自律（40%）＋協働（40%）＋創造（20%））<br>(2) チームの取り組み20%（協働（50%）＋創造（50%））<br>(3) 成果 20%（協働（50%）＋創造（50%））<br>上記（1）は、ルーブリックを用いた学生の自己評価、相互評価と教員の評価をもとに、チームの担当教員が評価を行う。（2）（3）は計画発表会での複数の教員などによる評価とする。60点以上を合格とする。<br>評価の対象としない欠席条件(割合) 1/4以上の欠課  |  |  |  |  |
| Characteristics of Class / Division in Learning   |   |  |  |  |  |
| <input checked="" type="checkbox"/> Active Learning                                     |   | <input checked="" type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class<br><input type="checkbox"/> Instructor Professionally Experienced |  |
| Course Plan   |   |  |  |  |  |
|   |   |  | Theme  | Goals  |  |
| 1st Semester<br>r   | 1st Quarter   | 1st  | オリエンテーション<br>授業ガイダンス、チームビルディング<br>授業ガイダンスを受け、全体スケジュール、活動に関する諸注意、評価方法等を確認する。担当教員とチームメンバーの顔合わせ、チームビルディングを行う。       | この授業の目的や進め方を理解する   |  |
|   |   | 2nd  | 活動目標の決定および活動内容の計画、自己目標を各自で定めて記録する。チーム活動に向け、テーマに沿ってアイデアを出し議論をする。<br>決定した活動目標に沿って、実施方法、役割分担、スケジュール等を決定し活動計画書にまとめる。 | 自律、協働、創造の能力を身に付ける  |  |
|   |   | 3rd  | 活動目標の決定および活動内容の計画<br>チーム活動の目標決定に向け、テーマに沿ってアイデアを出し議論をする。決定した活動目標に沿って、方法、役割分担、スケジュール等を決定し活動計画書にまとめる。完成後は活動を開始する。   | 自律、協働、創造の能力を身に付ける  |  |

|  |             |      |   |   |
|--|-------------|------|---|---|
|  |             | 4th  | 活動目標の決定および活動内容の計画<br>チーム活動の目標決定に向け、テーマに沿ってアイデアを出し議論をする。決定した活動目標に沿って、方法、役割分担、スケジュール等を決定し活動計画書にまとめる。完成後は活動を開始する。                                    | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 5th  | 活動目標の決定および活動内容の計画<br>チーム活動の目標決定に向け、テーマに沿ってアイデアを出し議論をする。決定した活動目標に沿って、方法、役割分担、スケジュール等を決定し活動計画書にまとめる。活動計画書を提出する。                                     | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 6th  | チーム活動<br>活動計画書に従ってチームで活動を行う。計画発表会 & 意見交換会の準備を行う。  | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 7th  | 計画発表会 & 意見交換会<br>活動内容を共有するためにチームの活動について報告を行う。他のチームの報告を聞き、意見交換を行う。   | チームの活動を簡潔に伝えることができる<br>他のチームの活動を共有し評価し、意見を伝えることができる |
|  |             | 8th  | 計画の見直し・チーム活動<br>計画発表会 & 意見交換会を踏まえ、計画の見直しを行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  | 2nd Quarter | 9th  | チーム活動<br>活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 10th | チーム活動<br>活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。中間報告会の準備を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 11th | チーム活動<br>活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。中間報告会の準備を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 12th | チーム活動<br>活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。中間報告会の準備を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 13th | チーム活動<br>活動計画書に従ってチームで活動を行う。スケジュールの遅延や実施方法の不備等が明らかになった場合、活動計画の修正・変更を行う。   | 自律、協働、創造の能力を身に付ける                                   |
|  |             | 14th | これまでの活動のふりかえり<br>前期の振り返りを行うと共にこれまでのチーム活動を省み、今後の活動計画を確認する。各自の行動を省みて、自律、協働、創造に関して目標達成した点や反省点を自己および相互に記録する。自己および相互の行動の記録をもとにチーム担当教員より個別にフィードバックを受ける。 | チームや自身の行動を客観的にふりかえることができる                           |
|  |             | 15th | これまでの活動のふりかえり<br>前期の振り返りを行うと共にこれまでのチーム活動を省み、今後の活動計画を確認する。各自の行動を省みて、自律、協働、創造に関して目標達成した点や反省点を自己および相互に記録する。自己および相互の行動の記録をもとにチーム担当教員より個別にフィードバックを受ける。 | チームや自身の行動を客観的にふりかえることができる                           |
|  |             | 16th | 期末試験 実施せず   |   |

#### Evaluation Method and Weight (%)

|          | 個人評価（プロセス評価）（自律） | 個人評価（プロセス評価）（協働） | 個人評価（プロセス評価）（創造） | チーム評価（成果物、報告会）（協働） | チーム評価（成果物、報告会）（創造） | Total |
|----------|------------------|------------------|------------------|--------------------|--------------------|-------|
| Subtotal | 24               | 24               | 12               | 20                 | 20                 | 100   |
| 基礎的能力    | 0                | 0                | 0                | 0                  | 0                  | 0     |
| 専門的能力    | 0                | 0                | 0                | 0                  | 0                  | 0     |
| 分野横断的能力  | 24               | 24               | 12               | 20                 | 20                 | 100   |

|   |             |  |  |  |   |   |  |
|---|-------------|--|--|--|---|---|--|
| Akashi College  |             | Year   | 2023   |  | Course Title  | C o + w o r k III B   |  |
| Course Information  |             |  |  |  |   |   |  |
| Course Code   |             | 5419   |  | Course Category  |   | Specialized / Compulsory  |  |
| Class Format  |             | Seminar  |  | Credits  |   | School Credit: 1  |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade  |   | 4th   |  |
| Term  |             | Second Semester  |  | Classes per Week   |   | 2   |  |
| Textbook and/or Teaching Materials  |             | No required textbook and the required material will change according to the contents of the activity of each team.   |  |  |   |   |  |
| Instructor  |             | All faculty  |  |  |   |   |  |
| Course Objectives   |             |  |  |  |   |   |  |
| 1) Self-reliance: To acquire individuality and self-management ability<br>2) Co-operation skills: To gain the ability to work in teams and respect the teammates.<br>3) Creative Skills: To acquire the ability to gather and organize information, discover and propose solutions to problems. |             |  |  |  |   |   |  |
| Rubric  |             |  |  |  |   |   |  |
|   |             | Ideal Level  |  | Standard Level   |   | Unacceptable Level  |  |
| 1 Self-reliance   |             | Schedule management, reporting, contact, consultation, planning goals with the teammates   |  | Individually able to schedule management, reporting, contact, consultation, planning goals.                                    |   | Not able to schedule management, reporting, contact, consultation, and planning goals   |  |
| 2 Co-operation skills   |             | Open to different opinions, able to express the student personal opinion, and ability to lead the team into a consensus.   |  | Open to different opinions, able to express the student personal opinion, and ability to play the attributed role in the team. |   | Not open to different opinions, not able to express the student personal opinion, and can't to play the attributed role in the team.      |  |
| 3 Creative Skills   |             | The student can voluntarily gather information, organize and summarize this information, form ideas and explain those ideas to others.   |  | The student can voluntarily gather information, organize and summarize this information, and explain those ideas to others.    |   | The student can't voluntarily gather information, can't organize and summarize this information, and can't explain those ideas to others. |  |
| Assigned Department Objectives  |             |  |  |  |   |   |  |
| Teaching Method   |             |  |  |  |   |   |  |
| Outline   |             | This course aims to develop the students' self-reliance, co-operation and creative skills in a manner that the student can contribute to a team in a variety of environments (working with students from other departments, different age, and people from outside the school). Each group is to work with the instructor in charge and challenge themselves in creating something or perform activities that will bring happiness to someone other than the team members. Each team has to elaborate a plan and do its activities. The students will revise their plan after its presentation at a briefing session and retrospective evaluation.   |  |  |   |   |  |
| Style   |             | 2nd,3rd, and 4th academic year students from all four departments are randomly selected to compose a group with multiple students. After each student introduces themselves to the team, they will perform ice breaks and other activities that will help to build relationships within the group. Later the team will discuss and discover a problem to work with, make plans, divide roles among the members and work together toward a solution to the problem. Through working to solve this problem the students will achieve the goals of self-reliance, co-operation, and creativity. After the course start, make sure that you can contact the teacher in charge of the team. Based on the course rubric distributed in class each student has to establish individual goals. The course rubric is used to self-evaluation, mutual evaluation, and to evaluate the performance of each student. Every week at the end of the lesson, the student has to fill a retrospective sheet and set the next goal. |  |  |   |   |  |
| Notice  |             | The grading system of the course is composed on the self-evaluation by students, mutual evaluation, evaluation by the teacher in charge of the team (1), and multiple faculty members at the briefing session at the end of the term (2).<br>Students who miss 1/4 or more of classes will not be eligible for evaluation.   |  |  |   |   |  |
| Characteristics of Class / Division in Learning   |             |  |  |  |   |   |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input checked="" type="checkbox"/> Aided by ICT   |  | <input checked="" type="checkbox"/> Applicable to Remote Class   |   | <input type="checkbox"/> Instructor Professionally Experienced  |  |
|   |             |  |  |  |   |   |  |
| Course Plan   |             |  |  |  |   |   |  |
|   |             |  | Theme  |  | Goals   |   |  |
| 2nd Semester<br>r   | 3rd Quarter | 1st  | Course overall guidance, presentation of the members of each team, team building guidance, confirmation of course schedule, restrictions and advice regarding the activities, explanation of the evaluation method. Later team members and the team and the teacher in charge meet and work together on team building. |  | To acquire Self-reliance, Co-operation and Creative Skills. |   |  |
|   |             | 2nd  | Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan.           |  | To acquire Self-reliance, Co-operation and Creative Skills. |   |  |
|   |             | 3rd  | Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan.           |  | To acquire Self-reliance, Co-operation and Creative Skills. |   |  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 4th  | Each student set the activity targets, and self-goals. The team will discuss ideas and a theme to the activities. Later according to the team activity goal, the group will work on the implementation method, division of roles among the members and schedule, which will be summarized in an action plan. | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 5th  | Setting targets and planning activities, submit the action plan. According to the theme and goals of the team, the group will draw ideas and discuss them. The group will establish the activity goal, decide the method to achieve it, decide members' role sharing, schedule, and summarize in a plan.     | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 6th  | Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc.  | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 7th  | Team activities: Work according to the action plan.  | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 8th  | No mid-term Exam   |   |
|  | 4th Quarter | 9th  | Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.   | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 10th | Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.   | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 11th | Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.   | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 12th | Team activities: Work according to the action plan. The action plan may be modified/changed, according to schedule delay, the incompleteness of the implementation method, etc. Prepare to the briefing session.   | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 13th | Briefing session: Report the activities of the team and listen to reports from other groups.   | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 14th | Retrospective meeting and summary of activities: The group will discuss the results from the briefing session and review the team action plan. The students will evaluate individually and mutually their achieved points and goals, regarding self-reliance, co-operation, and creativity.                  | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 15th | Retrospective meeting and summary of activities: The group will discuss the results from the briefing session and review the team action plan. The students will evaluate individually and mutually their achieved points and goals, regarding self-reliance, co-operation, and creativity.                  | To acquire Self-reliance, Co-operation and Creative Skills. |
|  |             | 16th | No end-term Exam   |   |

#### Evaluation Method and Weight (%)

|                         | Individual Self-reliance (process) | Individual Co-operation (process) | Individual Creativity (process) | Team operation Co- (process) | Team Creativity (process) | Other | Total |
|-------------------------|------------------------------------|-----------------------------------|---------------------------------|------------------------------|---------------------------|-------|-------|
| Subtotal                | 24                                 | 24                                | 12                              | 20                           | 20                        | 0     | 100   |
| Basic Proficiency       | 0                                  | 0                                 | 0                               | 0                            | 0                         | 0     | 0     |
| Specialized Proficiency | 0                                  | 0                                 | 0                               | 0                            | 0                         | 0     | 0     |
| Cross Area Proficiency  | 24                                 | 24                                | 12                              | 20                           | 20                        | 0     | 100   |

|  |   |                                       |   |  |  |
|--|---|---------------------------------------|---|--|--|
| Akashi College   |   | Year                                  | 2023  | Course Title   | Applied Physics I  |
| Course Information   |   |                                       |   |  |  |
| Course Code  | 5420  |                                       | Course Category   | Specialized / Compulsory   |  |
| Class Format   | Lecture   |                                       | Credits   | School Credit: 1   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade   | 4th  |  |
| Term   | First Semester  |                                       | Classes per Week  | 2  |  |
| Textbook and/or Teaching Materials   |   |                                       |   |  |  |
| Instructor   | OGASAWARA Hiromichi   |                                       |   |  |  |
| Course Objectives  |   |                                       |   |  |  |
| (1) Understand the description of motion of an object and the fundamental laws of mechanics.                   |   |                                       |   |  |  |
| (2) Understand the basics of how to handle point masses in general based on the fundamental laws of mechanics. |   |                                       |   |  |  |
| (3) Understand the basics of how to handle rigid body based on the fundamental laws of mechanics.              |   |                                       |   |  |  |
| Rubric   |   |                                       |   |  |  |
|  | Ideal Level   |                                       | Standard Level  |  | Unacceptable Level   |
| Achievement 1  | Can explain the description of the motion of an object and the fundamental laws of mechanics correctly and apply them to specific questions accurately.   |                                       | Can explain the description of the motion of an object and the fundamental laws of mechanics and apply them to specific questions.    |  | Cannot explain the description of the motion of an object and the fundamental laws of mechanics or apply them to specific questions.                       |
| Achievement 2  | Can explain the basics of how to handle point masses based on the fundamental laws of mechanics correctly and apply them to specific questions accurately.  |                                       | Can explain the basics of how to handle point masses based on the fundamental laws of mechanics and apply them to specific questions. |  | Cannot explain the basics of how to handle point masses based on the fundamental laws of mechanics or apply them to specific questions.                    |
| Achievement 3  | Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics correctly and apply them to specific questions accurately.  |                                       | Can explain the basics of how to handle rigid body based on the fundamental laws of mechanics and apply them to specific questions.   |  | Cannot explain the basics of how to handle rigid body based on the fundamental laws of mechanics correctly or apply them to specific questions accurately. |
| Assigned Department Objectives   |   |                                       |   |  |  |
| Teaching Method  |   |                                       |   |  |  |
| Outline  | Following Science IIIA (second semester), this course will lecture on mechanics.  |                                       |   |  |  |
| Style  | Classes will be taught in a lecture style, and there will also be exercises and quizzes.  |                                       |   |  |  |
| Notice   | <p>Instead of learning each knowledge (the result of applying the law to a particular situation, how to solve the problem) by memorizing it individually, students should understand the laws that govern them (including being able to apply them to specific situations). Also, students should be aware of the relationships between the various laws and try to understand concepts in physics systematically.</p> <p>The schedule of the midterm exam may be changed.</p> <p>Students who miss 1/3 or more of classes will not be eligible for a passing evaluation.</p> |                                       |   |  |  |
| Characteristics of Class / Division in Learning  |   |                                       |   |  |  |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class                               | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |   |                                       |   |  |  |
|  |   |                                       | Theme   | Goals  |  |
| 1st Semester   | 1st Quarter   | 1st                                   | Motion and force, and mechanical energy   | Learn how to handle motion of objects in planes and spaces.                                  |  |
|  |   | 2nd                                   | Motion and force, and mechanical energy   | Learn about the laws of motion.  |  |
|  |   | 3rd                                   | Motion and force, and mechanical energy   | Learn about work and kinetic energy.   |  |
|  |   | 4th                                   | Motion and force, and mechanical energy   | Learn about mechanical energy.   |  |
|  |   | 5th                                   | Motion and force, and mechanical energy   | Learn about inertial force.  |  |
|  |   | 6th                                   | Law on momentum and angular momentum  | Learn about the laws of momentum.  |  |
|  |   | 7th                                   | Law on momentum and angular momentum  | Learn about the laws of angular momentum.  |  |
|  |   | 8th                                   | Midterm exam  |  |  |
|  | 2nd Quarter   | 9th                                   | Law on momentum and angular momentum  | Learn about the laws of angular momentum in the system of particles.                         |  |
|  |   | 10th                                  | Law on momentum and angular momentum  | Learn about the translational and rotational motion.   |  |
|  |   | 11th                                  | Rigid body dynamics   | Learn how to handle rigid bodies with a fixed axis.  |  |
|  |   | 12th                                  | Rigid body dynamics   | Learn about the moment of inertia.   |  |
|  |   | 13th                                  | Rigid body dynamics   | Learn how to handle rigid bodies without fixed axes.   |  |
|  |   | 14th                                  | Rigid body dynamics   | Learn the basics of momentum, angular momentum, and energy in the mechanics of rigid bodies. |  |
|  |   | 15th                                  | Rigid body dynamics   | Can solve somewhat complicated problems about rigid bodies.                                  |  |
|  |   | 16th                                  | Final exam  |  |  |

| Evaluation Method and Weight (%) |              |                     |                       |       |
|----------------------------------|--------------|---------------------|-----------------------|-------|
|                                  | Examinations | Exercises / Quizzes | Attendance / Behavior | Total |
| Subtotal                         | 40           | 30                  | 30                    | 100   |
| Basic Proficiency                | 0            | 0                   | 0                     | 0     |
| Specialized Proficiency          | 40           | 30                  | 30                    | 100   |
| Cross Area Proficiency           | 0            | 0                   | 0                     | 0     |

|   |  |                                       |   |  |   |                       |
|---|--|---------------------------------------|---|--|---|-----------------------|
| Akashi College  |  | Year                                  | 2023  |  | Course Title  | Electronic Circuits I |
| Course Information  |  |                                       |   |  |   |                       |
| Course Code   | 5421   |                                       |   | Course Category  | Specialized / Compulsory  |                       |
| Class Format  | Lecture  |                                       |   | Credits  | School Credit: 1  |                       |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       |   | Student Grade  | 4th   |                       |
| Term  | First Semester   |                                       |   | Classes per Week   | 2   |                       |
| Textbook and/or Teaching Materials  |  |                                       |   |  |   |                       |
| Instructor  | OHMUKAI Masato   |                                       |   |  |   |                       |
| Course Objectives   |  |                                       |   |  |   |                       |
| The goal is to achieve the following competencies:<br>1) Understand the characteristics of active elements, accurately understand the principles and properties of basic circuits using them, and can analyze these circuits.<br>2) Accurately understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.<br>3) Accurately understand the principles and properties of circuits using arithmetic amplifiers, can analyze and design these circuits.<br>4) Accurately understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits. |  |                                       |   |  |   |                       |
| Rubric  |  |                                       |   |  |   |                       |
|   | Ideal Level  |                                       | Standard Level  |  | Unacceptable Level  |                       |
| Achievement 1   | Understand the characteristics of active elements, accurately understand the principles and properties of basic circuits using them, and can analyze these circuits.   |                                       | Understand the characteristics of active elements, understand the principles and properties of basic circuits using them, and can analyze these circuits. |  | Do not understand the characteristics of active elements or the principles and properties of basic circuits using them. |                       |
| Achievement 2   | Accurately understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.   |                                       | Understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.                   |  | Do not understand the principles and properties of negative-feedback circuits and various amplifier circuits.           |                       |
| Achievement 3   | Understand the principles and properties accurately, can analyze and design circuits using arithmetic amplifiers.  |                                       | Understand the principles and properties, can analyze and design circuits using arithmetic amplifiers.  |  | Do not understand the principles and properties of circuits using arithmetic amplifiers.                                |                       |
|   | Accurately understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits.   |                                       | Understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits.                   |  | Do not understand the principles and properties of oscillator, modulator, and demodulator circuits.                     |                       |
| Assigned Department Objectives  |  |                                       |   |  |   |                       |
| Teaching Method   |  |                                       |   |  |   |                       |
| Outline   | We will explain the basics of analogue electronic circuits using active elements such as diodes, transistors, field effect transistors (FET), and operation amplifiers.  |                                       |   |  |   |                       |
| Style   | Classes will be held in a lecture style, mainly by explaining content following the textbook. Students will work on exercises and design assignments as appropriate.   |                                       |   |  |   |                       |
| Notice  | Students are required to learn in an active manner so they can design circuits themselves. If possible, they should construct the circuit they designed and study its operation.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade. |                                       |   |  |   |                       |
| Characteristics of Class / Division in Learning   |  |                                       |   |  |   |                       |
| <input type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |                       |
| Course Plan   |  |                                       |   |  |   |                       |
|   |  |                                       | Theme   | Goals  |   |                       |
| 1st Semester<br>r   | 1st Quarter  | 1st                                   | Semiconductor   | Understand the types of semiconductors and the electrical conduction principles within semiconductors. |   |                       |
|   |  | 2nd                                   | Diode   | Understand the rectification and voltage current characteristics of pn junction.                       |   |                       |
|   |  | 3rd                                   | Transistor  | Understand the basic structure, behavior and static properties of transistors.                         |   |                       |
|   |  | 4th                                   | FET   | Understand the basic structure, operation and static properties of FETs.                               |   |                       |
|   |  | 5th                                   | IC  | Understand the basic structure, operation and static properties of IC.                                 |   |                       |
|   |  | 6th                                   | Transistor amplifier circuits   | Understand the basics of transistor amplifier circuits.  |   |                       |
|   |  | 7th                                   | Transistor bias circuit   | Understand how to design a simple bias circuit for an amplifier circuit using transistors.             |   |                       |
|   |  | 8th                                   | Midterm exam  |  |   |                       |
|   | 2nd Quarter  | 9th                                   | Transistor equivalent circuit 1   | Understand fixed bias and self-bias circuits.  |   |                       |
|   |  | 10th                                  | Transistor equivalent circuit 2   | Understand the current feedback bias circuit.  |   |                       |



|  |  |      |  |   |
|--|--|------|--|---|
|  |  | 11th | Emitter ground amplifier circuit               | Understand gain, frequency band, input and output impedance in transistor amplifier circuits. |
|  |  | 12th | Transistor negative-feedback amplifier circuit | Understand negative-feedback amplifier circuits using transistors.                            |
|  |  | 13th | FET bias circuit                               | Understand how to design a simple bias circuit for an amplifier circuit using FETs.           |
|  |  | 14th | FET equivalent circuit                         | Understand the analysis of a source ground amplifier circuit using an equivalent circuit.     |
|  |  | 15th | FET negative-feedback amplification circuit    | Understand negative-feedback amplifier circuit using FETs.                                    |
|  |  | 16th | Final exercise                                 |   |

| Evaluation Method and Weight (%) |             |          |       |
|----------------------------------|-------------|----------|-------|
|                                  | Examination | Exercise | Total |
| Subtotal                         | 60          | 40       | 100   |
| Basic Proficiency                | 0           | 0        | 0     |
| Specialized Proficiency          | 60          | 40       | 100   |
| Cross Area Proficiency           | 0           | 0        | 0     |

|  |   |  |  |  |  |
|--|---|--|--|--|--|
| Akashi College   |   | Year   | 2023   | Course Title   | Preliminaries to Graduation Thesis   |
| Course Information   |   |  |  |  |  |
| Course Code  | 5422  |  | Course Category  | Specialized / Compulsory   |  |
| Class Format   | Seminar   |  | Credits  | School Credit: 1   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade  | 4th  |  |
| Term   | Second Semester   |  | Classes per Week   | 2  |  |
| Textbook and/or Teaching Materials   |   |  |  |  |  |
| Instructor   | All faculty of the department   |  |  |  |  |
| Course Objectives  |   |  |  |  |  |
| (1) Can continuously explore things.<br>(2) Can summarize the results obtained for the project undertaken.<br>(3) Can consider the research theme in various approaches, and create flexible and innovative ideas. |   |  |  |  |  |
| Rubric   |   |  |  |  |  |
|  | Ideal Level   |  | Standard Level   |  | Unacceptable Level   |
| Achievement 1  | Can continuously explore things and obtain results that match with the theme.   |  | Can continuously explore things.   |  | Cannot continuously explore things.  |
| Achievement 2  | Can properly summarize the results obtained on the theme addressed.   |  | Can summarize the results obtained on the theme addressed.                                       |  | Cannot summarize the results obtained on the theme addressed.                                      |
| Achievement 3  | Can consider the research theme in various approaches, and create flexible and innovative ideas. In addition, can choose the appropriate approach.  |  | Can consider the research theme in various approaches, and create flexible and innovative ideas. |  | Cannot consider the research theme in various approaches, or create flexible and innovative ideas. |
| Assigned Department Objectives   |   |  |  |  |  |
| Teaching Method  |   |  |  |  |  |
| Outline  | The aim of this course is to develop the basic abilities necessary for graduation research in the fifth year. Students will gain the basic knowledge necessary to address a research theme and examine how to approach them.  |  |  |  |  |
| Style  | Themed research will be conducted by multiple faculty members (laboratories), and students will be assigned to one of them. In accordance with the instructions of the supervisor of the laboratory they are assigned to, students will conduct lecture-based learning, document research, experiments, simulations, etc. |  |  |  |  |
| Notice   | Engage in research actively and continuously.<br>Students who spend less than 22.5 hours on research will not be eligible for a passing grade.  |  |  |  |  |
| Characteristics of Class / Division in Learning  |   |  |  |  |  |
| <input checked="" type="checkbox"/> Active Learning  |   | <input checked="" type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class   |  |
| <input type="checkbox"/> Instructor Professionally Experienced   |   |  |  |  |  |
| Course Plan  |   |  |  |  |  |
|  |   |  | Theme  | Goals  |  |
| 2nd Semester   | 3rd Quarter   | 1st  | Laboratory assignments   | After learning the research details of each laboratory, students can apply for the laboratory they wish to join. |  |
|  |   | 2nd  | Themed research  | Conduct lecture-based learning, document research, experiments, simulations, etc. under the supervisor.          |  |
|  |   | 3rd  | Same as above  | Same as above  |  |
|  |   | 4th  | Same as above  | Same as above  |  |
|  |   | 5th  | Same as above  | Same as above  |  |
|  |   | 6th  | Same as above  | Same as above  |  |
|  |   | 7th  | Same as above  | Same as above  |  |
|  |   | 8th  | Same as above  | Same as above  |  |
|  | 4th Quarter   | 9th  | Same as above  | Same as above  |  |
|  |   | 10th   | Same as above  | Same as above  |  |
|  |   | 11th   | Same as above  | Same as above  |  |
|  |   | 12th   | Same as above  | Same as above  |  |
|  |   | 13th   | Same as above  | Same as above  |  |
|  |   | 14th   | Preparing a resume for themed research presentation  | Can summarize the results of the themed research and prepare a resume for the presentation.                      |  |
|  |   | 15th   | Themed research presentation   | Can give an oral presentation on the results of the themed research.   |  |
|  |   | 16th   | No final exam  |  |  |
| Evaluation Method and Weight (%)   |   |  |  |  |  |
|  | Initiative  |  | Presentation   |  | Total  |
| Subtotal   | 50  |  | 50   |  | 100  |

|                         |    |    |     |
|-------------------------|----|----|-----|
| Basic Proficiency       | 0  | 0  | 0   |
| Specialized Proficiency | 50 | 50 | 100 |
| Cross Area Proficiency  | 0  | 0  | 0   |

|  |   |                                       |  |   |   |                       |
|--|---|---------------------------------------|--|---|---|-----------------------|
| Akashi College   |   | Year                                  | 2023   |   | Course Title  | Applied Mathematics A |
| Course Information   |   |                                       |  |   |   |                       |
| Course Code  | 5423  |                                       | Course Category  | Specialized / Compulsory  |   |                       |
| Class Format   | Lecture   |                                       | Credits  | School Credit: 2  |   |                       |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 4th   |   |                       |
| Term   | First Semester  |                                       | Classes per Week   | 4   |   |                       |
| Textbook and/or Teaching Materials   |   |                                       |  |   |   |                       |
| Instructor   | OGASAWARA Hiromichi   |                                       |  |   |   |                       |
| Course Objectives  |   |                                       |  |   |   |                       |
| (1) Can make a deductive inference based on basic matters, including reading and writing logical sentences containing mathematical formulae. |   |                                       |  |   |   |                       |
| (2) Can perform basic calculations in Fourier analysis and apply them to engineering and physics on a basic level.                           |   |                                       |  |   |   |                       |
| Rubric   |   |                                       |  |   |   |                       |
|  | Ideal Level   |                                       | Standard Level   |   | Unacceptable Level  |                       |
| Achievement 1  | Can accurately make a deductive inference based on basic matters.   |                                       | Can make a deductive inference based on basic matters.   |   | Cannot make a deductive inference based on basic matters.   |                       |
| Achievement 2  | Can fully perform basic calculations in Fourier analysis and fully apply them to engineering and physics on a basic level.  |                                       | Can perform basic calculations in Fourier analysis and apply them to engineering and physics on a basic level. |   | Cannot perform basic calculations in Fourier analysis and apply them to engineering and physics on a basic level. |                       |
| Assigned Department Objectives   |   |                                       |  |   |   |                       |
| Teaching Method  |   |                                       |  |   |   |                       |
| Outline  | In this course, we will learn the basics of Fourier analysis (including topics on the Laplace transform) based on the calculus and linear algebra learned so far. This is also applied to engineering and physics, so this class will also cover them, including basic applications.  |                                       |  |   |   |                       |
| Style  | Classes will be taught in a lecture style, and there will also be exercises and quizzes.  |                                       |  |   |   |                       |
| Notice   | Instead of memorizing theorems and formulae individually, carefully follow the development of discussions and the proof of theorems given in each lecture, so that you can understand it yourself. In problem exercises, do not try to remember the steps to solve a problem, but rather try to solve it yourself based on definitions and basic theorem and ideas. Also, if necessary, review the content learned during the previous years. The schedule of the midterm exam may be changed.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |                                       |  |   |   |                       |
| Characteristics of Class / Division in Learning  |   |                                       |  |   |   |                       |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class  | <input type="checkbox"/> Instructor Professionally Experienced  |                       |
| Course Plan  |   |                                       |  |   |   |                       |
|  |   |                                       | Theme  | Goals   |   |                       |
| 1st Semester   | 1st Quarter   | 1st                                   | Review and supplementary lesson on calculus  | Can handle the basic matters of calculus that's necessary for future learning.  |   |                       |
|  |   | 2nd                                   | Organize data  | Can organize data.  |   |                       |
|  |   | 3rd                                   | Laplace transform  | Can calculate and discuss based on the basic matters of the Laplace transform.  |   |                       |
|  |   | 4th                                   | Laplace transform  | Can perform calculations and discussions related to the inverse Laplace transform.  |   |                       |
|  |   | 5th                                   | Application to vibration phenomena   | Can apply the Laplace transform to mechanical vibration phenomena.  |   |                       |
|  |   | 6th                                   | Application to vibration phenomena<br>Fourier series   | Can apply the Laplace transform to AC circuits. Can calculate and discuss based on the basic matters of the Fourier series. |   |                       |
|  |   | 7th                                   | Fourier series   | Can calculate and discuss based on the basic matters of the Fourier sine / cosine series.                                   |   |                       |
|  |   | 8th                                   | Midterm exam<br>Fourier series   | Can calculate and discuss based on the basic matters of the complex Fourier series.   |   |                       |
|  | 2nd Quarter   | 9th                                   | Fourier series<br>Fourier transform  | Can handle the formulae related to Fourier series. Can extend Fourier series expansion for non-periodic functions.          |   |                       |
|  |   | 10th                                  | Fourier transform  | Can calculate and discuss based on the basic matters of the Fourier transform.  |   |                       |
|  |   | 11th                                  | Fourier transform<br>Wave equation   | Can handle the formulae related to Fourier transform.   |   |                       |
|  |   | 12th                                  | Wave equation  | Can handle wave phenomena based on the laws of motion and the methods of Fourier analysis.                                  |   |                       |
|  |   | 13th                                  | Heat equation  | Can handle standing waves based on Fourier series. Can derive the heat equation.  |   |                       |
|  |   | 14th                                  | Heat equation  | Can handle heat conduction phenomena based on the methods of Fourier analysis.  |   |                       |

|                                  |  |              |   |  |       |
|----------------------------------|--|--------------|---|--|-------|
|                                  |  | 15th         | Supplementary lesson on the Laplace transform | Can calculate and discuss matters related to delta function and convolution. |       |
|                                  |  | 16th         | Final exam                                    |  |       |
| Evaluation Method and Weight (%) |  |              |   |  |       |
|                                  |  | Examinations | Exercises / Quizzes                           | Attendance / Behavior  | Total |
| Subtotal                         |  | 40           | 30  | 30   | 100   |
| Basic Proficiency                |  | 40           | 30  | 30   | 100   |
| Specialized Proficiency          |  | 0            | 0   | 0  | 0     |
| Cross Area Proficiency           |  | 0            | 0   | 0  | 0     |

|  |             |  |   |  |              |  |  |
|--|-------------|--|---|--|--------------|--|--|
| Akashi College   |             | Year   | 2023  |  | Course Title | Applied Mathematics B  |  |
| Course Information   |             |  |   |  |              |  |  |
| Course Code  |             | 5424   |   | Course Category  |              | Specialized / Compulsory   |  |
| Class Format   |             | Lecture  |   | Credits  |              | School Credit: 2   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  |              | 4th  |  |
| Term   |             | Second Semester  |   | Classes per Week   |              | 4  |  |
| Textbook and/or Teaching Materials   |             |  |   |  |              |  |  |
| Instructor   |             | OGASAWARA Hiromichi  |   |  |              |  |  |
| Course Objectives  |             |  |   |  |              |  |  |
| (1) Can make a deductive inference based on basic matters, including reading and writing logical sentences containing mathematical formulae. |             |  |   |  |              |  |  |
| (2) Can perform basic calculations in vector calculus and apply them to engineering and physics on a basic level.                            |             |  |   |  |              |  |  |
| Rubric   |             |  |   |  |              |  |  |
|  |             | Ideal Level  |   | Standard Level   |              | Unacceptable Level   |  |
| Achievement 1  |             | Can accurately make a deductive inference based on basic matters.  |   | Can make a deductive inference based on basic matters.   |              | Cannot make a deductive inference based on basic matters.  |  |
| Achievement 2  |             | Can fully perform basic calculations in vector calculus and fully apply them to engineering and physics on a basic level.  |   | Can perform basic calculations in vector calculus and apply them to engineering and physics on a basic level.  |              | Cannot perform basic calculations in vector calculus and apply them to engineering and physics on a basic level. |  |
| Assigned Department Objectives   |             |  |   |  |              |  |  |
| Teaching Method  |             |  |   |  |              |  |  |
| Outline  |             | In this course, we will learn the basics of vector calculus (including topics on complex functions of one variable) based on the calculus and linear algebra learned so far. This is also applied to engineering and physics, so this class will also cover them, including basic applications.  |   |  |              |  |  |
| Style  |             | Classes will be taught in a lecture style, and there will also be exercises and quizzes.   |   |  |              |  |  |
| Notice   |             | Instead of memorizing theorems and formulae individually, carefully follow the development of discussions and the proof of theorems given in each lecture, so that you can understand it yourself. In problem exercises, do not try to remember the steps to solve a problem, but rather try to solve it yourself based on definitions and basic theorem and ideas. Also, if necessary, review the content learned during the previous years. The schedule of the midterm exam may be changed. Students who miss 1/3 or more of classes will not be eligible for evaluation. |   |  |              |  |  |
| Characteristics of Class / Division in Learning  |             |  |   |  |              |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input checked="" type="checkbox"/> Applicable to Remote Class   |              | <input type="checkbox"/> Instructor Professionally Experienced   |  |
| Course Plan  |             |  |   |  |              |  |  |
|  |             |  | Theme   | Goals  |              |  |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st  | Review and supplementary lesson on vector calculations  | Can handle the basic matters of vector calculations that's necessary for future learning.  |              |  |  |
|  |             | 2nd  | Curves  | Can handle curves using parameters.  |              |  |  |
|  |             | 3rd  | Curves  | Can handle curves using the arc length parameter.  |              |  |  |
|  |             | 4th  | Line integrals  | Can calculate and discuss based on the basic matters of line integrals.  |              |  |  |
|  |             | 5th  | Line integrals<br>Gradient  | Can perform calculations and discussions related to Green's theorem.<br>Can calculate and discuss based on the basic matters of the gradient vector.   |              |  |  |
|  |             | 6th  | Gradient  | Can perform calculations and discussions related to exact differential equations.  |              |  |  |
|  |             | 7th  | Conservative forces and potential energy<br>Surfaces and surface integrals                                    | Can handle conservative forces and potential energy based on the methods of vector calculus.<br>Can handle surfaces using parameters.  |              |  |  |
|  |             | 8th  | Surfaces and surface integrals<br>Midterm exam  | Can perform calculations and discussions related to tangent planes.  |              |  |  |
|  | 4th Quarter | 9th  | Surfaces and surface integrals  | Can calculate and discuss based on the basic matters of surface integrals.   |              |  |  |
|  |             | 10th   | Derivative of vector fields and integral theorem  | Can calculate and discuss based on the basic matters of volume integrals.  |              |  |  |
|  |             | 11th   | Derivative of vector fields and integral theorem  | Can calculate and discuss based on the basic matters of the divergence of a vector field and Gauss's theorem.  |              |  |  |
|  |             | 12th   | Derivative of vector fields and integral theorem<br>Overview of the theory of functions of a complex variable | Can calculate and discuss based on the basic matters of the rotation of a vector field and Stokes's theorem.<br>Can calculate and discuss based on the basic matters of the functions of a complex variable. |              |  |  |

|  |  |      |   |   |
|--|--|------|---|---|
|  |  | 13th | Overview of the theory of functions of a complex variable | Can calculate and discuss based on the basic matters of complex integrals.                |
|  |  | 14th | Overview of the theory of functions of a complex variable | Can calculate and discuss based on the basic matters of singular points.                  |
|  |  | 15th | Application to electromagnetism                           | Can handle the basic matters of electromagnetism based on the methods of vector calculus. |
|  |  | 16th | Final exam  |   |

#### Evaluation Method and Weight (%)

|                         | Examinations | Exercises / Quizzes | Attendance / Behavior | Total |
|-------------------------|--------------|---------------------|-----------------------|-------|
| Subtotal                | 40           | 30                  | 30                    | 100   |
| Basic Proficiency       | 40           | 30                  | 30                    | 100   |
| Specialized Proficiency | 0            | 0                   | 0                     | 0     |
| Cross Area Proficiency  | 0            | 0                   | 0                     | 0     |

|  |             |  |   |   |  |  |  |
|--|-------------|--|---|---|--|--|--|
| Akashi College   |             | Year   | 2023  |   | Course Title   | Electromagnetics IIA   |  |
| Course Information   |             |  |   |   |  |  |  |
| Course Code  |             | 5425   |   | Course Category   |  | Specialized / Compulsory   |  |
| Class Format   |             | Lecture  |   | Credits   |  | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade   |  | 4th  |  |
| Term   |             | First Semester   |   | Classes per Week  |  | 2  |  |
| Textbook and/or Teaching Materials   |             |  |   |   |  |  |  |
| Instructor   |             | OHMUKAI Masato   |   |   |  |  |  |
| Course Objectives  |             |  |   |   |  |  |  |
| (1) Understand and can explain the laws of magnetism.<br>(2) Can explain the various properties derived from the Maxwell equation. |             |  |   |   |  |  |  |
| Rubric   |             |  |   |   |  |  |  |
|  |             | Ideal Level  |   | Standard Level  |  | Unacceptable Level   |  |
| Achievement 1  |             | Understand and can explain in detail the laws of magnetism.  |   | Understand and can explain the laws of magnetism.                     |  | Do not understand and cannot explain the laws of magnetism.              |  |
| Achievement 2  |             | Can explain in detail the various properties derived from the Maxwell equation.  |   | Can explain the various properties derived from the Maxwell equation. |  | Cannot explain the various properties derived from the Maxwell equation. |  |
| Assigned Department Objectives   |             |  |   |   |  |  |  |
| Teaching Method  |             |  |   |   |  |  |  |
| Outline  |             | Based on the knowledge of electrostatic fields learned in Electromagnetism I, this course will be focusing on magnetic fields. Afterward, acquire the knowledge of the entire system of electro-magnetism by learning the Maxwell equation, electromagnetic waves will also be taught. There will be quizzes to check students' understanding. |   |   |  |  |  |
| Style  |             | The first part of classes will be taught in a lecture style to explain the outline. Then, each student will self-study. There will be a quiz at the end.   |   |   |  |  |  |
| Notice   |             | This course requires an active attitude. It's essential to ask questions if anything is unclear during classes. Any assignment that are given must be submitted on time.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade.   |   |   |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |   |   |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input type="checkbox"/> Applicable to Remote Class                   |  | <input type="checkbox"/> Instructor Professionally Experienced           |  |
|  |             |  |   |   |  |  |  |
| Course Plan  |             |  |   |   |  |  |  |
|  |             |  | Theme   |   | Goals  |  |  |
| 1st Semester   | 1st Quarter | 1st  | Biot-Savart law   |   | Learn how to calculate the magnetic flux density produced by current.  |  |  |
|  |             | 2nd  | Ampère's contour integral law   |   | Learn about the Ampère's contour integral law and learn how to calculate magnetic flux density using this law.   |  |  |
|  |             | 3rd  | Rotation of vectors (introduction of rot), Stokes' theorem  |   | Learn the concept of Rotation of vectors and the Stokes' theorem. In addition, can use the above to derive the derivative form of the Ampère's contour integral law.   |  |  |
|  |             | 4th  | Vector potential and gauge problem  |   | Understand the potential of vectors, which is the potential for magnetic flux density, in relation to the scalar potential of electric fields. Also know about gauge issues.   |  |  |
|  |             | 5th  | The relationship between current density and vector potential, and the calculation method of vector potential |   | Understand the concept of vector potential by knowing specific examples.   |  |  |
|  |             | 6th  | Lorentz force   |   | Learn about Lorentz force, which is the force applied to charged particles moving in the magnetic field, and can calculate the force applied to wires placed in the magnetic field. Know the basics of motors, which is an application of this phenomenon. |  |  |
|  |             | 7th  | The torque of the current loop, the Hall effect   |   | Formulate the torque of the current loop. In addition, know about Hall effect.   |  |  |
|  |             | 8th  | Midterm exam  |   | Score 60 marks.  |  |  |
|  | 2nd Quarter | 9th  | Magnetic flux density and magnetization and magnetic fields   |   | Introduce the concept of magnetization and learn the definition of magnetic fields.  |  |  |
|  |             | 10th   | Boundary condition, magnetic material   |   | Learn about the boundary conditions of magnetic flux density and magnetic fields. In addition, learn about the concept while comparing the relationship between magnetic fields and magnetic flux density and magnetization to dielectric materials.       |  |  |
|  |             | 11th   | Classification of magnetic material   |   | Learn about the properties of the five types of magnetic materials.  |  |  |
|  |             | 12th   | Origin of anti-magnetism, magnetization curve and hysteresis loss   |   | Learn about the origin of anti-magnetism quantitatively. Learn about hysteresis by studying the properties of magnetization curves.  |  |  |



|  |  |      |  |   |
|--|--|------|--|---|
|  |  | 13th | Coulomb's law on magnetic poles, permanent magnets and magnetic circuits | It is known that Coulomb's law, similar to charge, is applicable for magnetic poles.  |
|  |  | 14th | The force at which the electromagnet attracts iron                       | Learn about the properties of permanent magnets and the theory of magnetic circuits. In addition, learn how to calculate the force that the electromagnet attracts a piece of iron. |
|  |  | 15th | Div, rot, grad and laplacian in different coordinate system              | Can derive div, rot, grad and laplacian in cylindrical and polar coordinates.   |
|  |  | 16th | Final exam   | Score 60 or more marks.   |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |             |  |  |   |   |  |  |
|--|-------------|--|--|---|---|--|--|
| Akashi College   |             | Year   | 2023   |   | Course Title  | Electromagnetics II B  |  |
| Course Information   |             |  |  |   |   |  |  |
| Course Code  |             | 5426   |  | Course Category   |   | Specialized / Compulsory   |  |
| Class Format   |             | Lecture  |  | Credits   |   | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade   |   | 4th  |  |
| Term   |             | Second Semester  |  | Classes per Week  |   | 2  |  |
| Textbook and/or Teaching Materials   |             |  |  |   |   |  |  |
| Instructor   |             | OHMUKAI Masato   |  |   |   |  |  |
| Course Objectives  |             |  |  |   |   |  |  |
| (1) Understand and can explain the laws of magnetism.<br>(2) Can explain the various properties derived from the Maxwell equation. |             |  |  |   |   |  |  |
| Rubric   |             |  |  |   |   |  |  |
|  |             | Ideal Level  |  | Standard Level  |   | Unacceptable Level   |  |
| Achievement 1  |             | Understand and can explain in detail the laws of magnetism.  |  | Understand and can explain the laws of magnetism.                     |   | Do not understand and cannot explain the laws of magnetism.              |  |
| Achievement 2  |             | Can explain in detail the various properties derived from the Maxwell equation.  |  | Can explain the various properties derived from the Maxwell equation. |   | Cannot explain the various properties derived from the Maxwell equation. |  |
| Assigned Department Objectives   |             |  |  |   |   |  |  |
| Teaching Method  |             |  |  |   |   |  |  |
| Outline  |             | Based on the knowledge of electrostatic fields learned in Electromagnetism I, this course will be focusing on magnetic fields. Afterward, acquire the knowledge of the entire system of electro-magnetism by learning the Maxwell equation, electromagnetic waves will also be taught. There will be quizzes to check students' understanding. |  |   |   |  |  |
| Style  |             | The first part of classes will be taught in a lecture style to explain the outline. Then, each student will self-study. There will be a quiz at the end.   |  |   |   |  |  |
| Notice   |             | This course requires an active attitude. It's essential to ask questions if anything is unclear during classes. Any assignment that are given must be submitted on time.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade.   |  |   |   |  |  |
| Characteristics of Class / Division in Learning  |             |  |  |   |   |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class        |   | <input type="checkbox"/> Instructor Professionally Experienced           |  |
| Course Plan  |             |  |  |   |   |  |  |
|  |             |  | Theme  |   | Goals   |  |  |
| 2nd Semester   | 3rd Quarter | 1st  | Faraday's law of electromagnetic induction   |   | Learn about Faraday's laws of electromagnetic induction in integrals and derivatives.   |  |  |
|  |             | 2nd  | Self-inductance and its calculation  |   | Learn about magnetic flux and magnetic field energy. Understand the definition of self-inductance and learn how to calculate it.  |  |  |
|  |             | 3rd  | Internal inductance and energy   |   | Calculate the internal inductance. Understand the energy of the magnetic field.   |  |  |
|  |             | 4th  | Mutual inductance, Neumann formula   |   | Learn about the concept of mutual inductance, and know the definition of coupling coefficients.   |  |  |
|  |             | 5th  | Examples of Neumann formula, general theory of energy  |   | We will give concrete examples of calculations using Neumann's formula and discuss the general theory of magnetic energy.   |  |  |
|  |             | 6th  | Unipolar lead, betatrons, and current in conductors  |   | Learn how to calculate the voltage generated in unipolar lead. In addition, learn about the principle of a betatron. Also know about the current in conductor.              |  |  |
|  |             | 7th  | Current distribution and skin effect within a conductor  |   | Learn about the distribution of current to alternating current in conductors and can analyze the skin effect quantitatively.  |  |  |
|  |             | 8th  | Midterm test   |   | Score 60 marks.   |  |  |
|  | 4th Quarter | 9th  | Integral and derivative forms of the Maxwell equations, displacement currents, and charge conservation |   | Learn about Maxwell's concept of displacement current and can derive the derivative form from the integral form of the four equations.                                      |  |  |
|  |             | 10th   | The potential expression of the Maxwell equation, retarded potentials and the Hertz vector             |   | Can consider the potential of time-dependent situations and use this potential to draw Maxwell's equations.   |  |  |
|  |             | 11th   | Maxwell electromagnetic equation and electromagnetic wave  |   | Can use Maxwell's equations to derive the wave equation which is applicable to electromagnetic wave.  |  |  |
|  |             | 12th   | The nature of the electromagnetic wave   |   | Can derive the nature of electromagnetic waves from Maxwell's equations.  |  |  |
|  |             | 13th   | Poynting vector  |   | Learn about the definition of Poynting vector and its physical meaning.   |  |  |
|  |             | 14th   | Dielectric loss and polarization of electromagnetic wave   |   | Learn about dielectric loss quantitatively. In addition, learn about the polarization of electromagnetic waves, also learn about plane waves and circularly polarized wave. |  |  |

|                                  |             |              |                                     |   |           |       |       |
|----------------------------------|-------------|--------------|-------------------------------------|---|-----------|-------|-------|
|                                  |             | 15th         | Electromagnetic waves in a medium   | Learn about the fact that the propagation of electromagnetic waves in a medium with a finite resistance is quantized. |           |       |       |
|                                  |             | 16th         | Final exam                          | Score 60 or more marks.   |           |       |       |
| Evaluation Method and Weight (%) |             |              |                                     |   |           |       |       |
|                                  | Examination | Presentation | Mutual Evaluations between students | Behavior  | Portfolio | Other | Total |
| Subtotal                         | 100         | 0            | 0                                   | 0   | 0         | 0     | 100   |
| Basic Proficiency                | 0           | 0            | 0                                   | 0   | 0         | 0     | 0     |
| Specialized Proficiency          | 100         | 0            | 0                                   | 0   | 0         | 0     | 100   |
| Cross Area Proficiency           | 0           | 0            | 0                                   | 0   | 0         | 0     | 0     |

|   |             |   |   |  |   |  |  |
|---|-------------|---|---|--|---|--|--|
| Akashi College  |             | Year  | 2023  |  | Course Title  | Solid State Physics A  |  |
| Course Information  |             |   |   |  |   |  |  |
| Course Code   |             | 5427  |   | Course Category  |   | Specialized / Compulsory   |  |
| Class Format  |             | Lecture   |   | Credits  |   | Academic Credit: 2   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |   | Student Grade  |   | 4th  |  |
| Term  |             | First Semester  |   | Classes per Week   |   | 2  |  |
| Textbook and/or Teaching Materials  |             |   |   |  |   |  |  |
| Instructor  |             | OHMUKAI Masato  |   |  |   |  |  |
| Course Objectives   |             |   |   |  |   |  |  |
| 1) Understand the Schrödinger equation and use it to understand the electronic state within an atom quantitatively.<br>2) Understand the chemistry of atoms and learn about band theory of solids.<br>3) Can explain the Hall effect quantitatively.<br>4) Understand the characteristics of current and voltage of pn junction quantitatively.<br>5) Can derive the capacity of the depletion region |             |   |   |  |   |  |  |
| Rubric  |             |   |   |  |   |  |  |
|   |             | Ideal Level   |   | Standard Level   |   | Unacceptable Level   |  |
| Achievement 1   |             | Thoroughly understand the Schrödinger equation and can use it to fully understand the electronic state within an atom quantitatively.   |   | Understand the Schrödinger equation and use it to understand the electronic state within an atom quantitatively. |   | Do not understand the Schrödinger equation and cannot use it to understand the electronic state within an atom quantitatively. |  |
| Achievement 2   |             | Thoroughly understand the chemistry of atoms and know in detail the band theory of solids.  |   | Understand the chemistry of atoms and know the band theory of solids.  |   | Do not understand the chemistry of atoms and do not know the band theory of solids.  |  |
| Achievement 3   |             | Can explain in detail the Hall effect quantitatively.   |   | Can explain the Hall effect quantitatively.  |   | Cannot explain the Hall effect quantitatively.   |  |
|   |             | Thoroughly understand the characteristics of current and voltage of pn junction quantitatively.   |   | Understand the characteristics of current and voltage of pn junction quantitatively.                             |   | Do not understand the characteristics of current and voltage of pn junction quantitatively.                                    |  |
|   |             | Can derive the capacity of the depletion region in detail.  |   | Can derive the capacity of the depletion region.   |   | Cannot derive the capacity of the depletion region.  |  |
| Assigned Department Objectives  |             |   |   |  |   |  |  |
| Teaching Method   |             |   |   |  |   |  |  |
| Outline   |             | The role of solids in electronic devices is very crucial. In this lecture, students will learn about the electronic states in solids from the quantum theory that forms the basic theories of electrons, and learn quantitatively about the behavior of electrons in metals and semiconductors from a basic perspective.  |   |  |   |  |  |
| Style   |             | The first part of classes will be taught in a lecture style to explain the outline. Then, each student will self-study. There will be a quiz at the end.  |   |  |   |  |  |
| Notice  |             | Because the class will handle various phenomena qualitatively, a mathematical foundation until the third year is essential. Also, be sure to review each time as new content will keep coming up. This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Student who fail to get a perfect score in quizzes will be given additional assignment reports.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade. |   |  |   |  |  |
| Characteristics of Class / Division in Learning   |             |   |   |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class   |   | <input type="checkbox"/> Instructor Professionally Experienced   |  |
|   |             |   |   |  |   |  |  |
| Course Plan   |             |   |   |  |   |  |  |
|   |             |   | Theme   |  | Goals   |  |  |
| 1st Semester  | 1st Quarter | 1st   | Quantum theory, Schrödinger equation                      |  | Understand the wave-particle duality of light and electrons and can derive the Schrödinger equation.  |  |  |
|   |             | 2nd   | Bohr's theory and atomic orbit                            |  | Can derive the Bohr's theory and calculate the radius and energy of the orbit. Learn about the types of atomic orbit.   |  |  |
|   |             | 3rd   | Covalent bond and energy band                             |  | Learn about the origin of covalent bonds and orbital hybridization, and the energy level becomes a band when many atoms are gathered.                                       |  |  |
|   |             | 4th   | Electrical conduction, phase velocity and group velocity  |  | Can derive the Drude's theory of electrical conduction, and know the definition of phase velocity and group velocity.   |  |  |
|   |             | 5th   | Dispersion relation and effective mass and brillouin zone |  | Can derive the effective mass by deriving the dispersion relationship between light and electrons. Understand the concept of electron hole. Learn about the brilluane zone. |  |  |
|   |             | 6th   | Free electron theory, density of states                   |  | Solve the Schrödinger equation to quantize momentum. The density of state of electrons will also calculate.   |  |  |
|   |             | 7th   | Hall effect and electron mobility                         |  | Can determine the Hall effect quantitatively, and can calculate the conductivity and the electron mobility from the results of the Hall effect experiment.                  |  |  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  | 2nd Quarter | 8th  | Midterm exam                               | Score 60 or more marks.   |
|  |             | 9th  | Carrier statistics in semiconductor I      | Can derive the carrier density in a semiconductor quantitatively. Understand the concept of effective density of state.   |
|  |             | 10th | Carrier statistics in semiconductor II     | Understand the nature of NP products. Learn about that there are three areas of temperature dependency for carrier density.   |
|  |             | 11th | Contact between semiconductor and metal    | Understand qualitatively that when a semiconductor and metal come into contact, two conditions are achieved.  |
|  |             | 12th | Einstein relation                          | Can derive Einstein relation, which show the relationship between diffusion coefficient and electron mobility. In addition, can derive the formula for a small carrier injection. |
|  |             | 13th | The I-V characteristics of the PN junction | Can derive the I-V characteristics of PN junction quantitatively.   |
|  |             | 14th | Capacity of the depletion region.          | Can derive quantitatively the capacity of the depletion region in a PN junction, and learn about the method of determining the diffusion potential in experiments.                |
|  |             | 15th | Review                                     | Review and organize the content learned so far. Learn about drift transistor if there is time.  |
|  |             | 16th | Final exam                                 | Score 60 or more marks.   |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|   |             |   |   |  |   |  |  |
|---|-------------|---|---|--|---|--|--|
| Akashi College  |             | Year  | 2023  |  | Course Title  | Solid State Physics B  |  |
| Course Information  |             |   |   |  |   |  |  |
| Course Code   |             | 5428  |   | Course Category  |   | Specialized / Compulsory                                       |  |
| Class Format  |             | Lecture   |   | Credits  |   | Academic Credit: 2   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |   | Student Grade  |   | 4th  |  |
| Term  |             | Second Semester   |   | Classes per Week   |   | 2  |  |
| Textbook and/or Teaching Materials  |             |   |   |  |   |  |  |
| Instructor  |             | OHMUKAI Masato  |   |  |   |  |  |
| Course Objectives   |             |   |   |  |   |  |  |
| 1) Learn about the Wiedemann–Franz law and Bloch's theorem.<br>2) Learn about dielectric polarization.<br>3) Learn about the various aspects of magnetic materials. |             |   |   |  |   |  |  |
| Rubric  |             |   |   |  |   |  |  |
|   |             | Ideal Level   |   | Standard Level   |   | Unacceptable Level   |  |
| Achievement 1   |             | Thoroughly understand the Wiedemann–Franz law and Bloch's theorem.  |   | Understand the Wiedemann–Franz law and Bloch's theorem.        |   | Do not understand the Wiedemann–Franz law and Bloch's theorem. |  |
| Achievement 2   |             | Thoroughly understand dielectric polarization.  |   | Understand dielectric polarization.                            |   | Do not understand dielectric polarization.                     |  |
| Achievement 3   |             | Thoroughly understand the various aspects of magnetic materials.  |   | Understand the various aspects of magnetic materials.          |   | Do not understand the various aspects of magnetic materials.   |  |
| Assigned Department Objectives  |             |   |   |  |   |  |  |
| Teaching Method   |             |   |   |  |   |  |  |
| Outline   |             | The role of solids in electronic devices is very crucial. In classes, we will introduce the properties of dielectric and magnetic materials in addition to the nature of electrons in metals.   |   |  |   |  |  |
| Style   |             | The first part of classes will be taught in a lecture style to explain the outline. Then, each student will self-study. There will be a quiz at the end.  |   |  |   |  |  |
| Notice  |             | Because the class will handle various phenomena qualitatively, a mathematical foundation until the third year is essential. Also, be sure to review each time as new content will keep coming up. This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Student who fail to get a perfect score in quizzes will be given additional assignment reports.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade. |   |  |   |  |  |
| Characteristics of Class / Division in Learning   |             |   |   |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class |   | <input type="checkbox"/> Instructor Professionally Experienced |  |
|   |             |   |   |  |   |  |  |
| Course Plan   |             |   |   |  |   |  |  |
|   |             |   | Theme   |  | Goals   |  |  |
| 2nd Semester  | 3rd Quarter | 1st   | Wiedemann–Franz law                                   |  | This law, which describes the relationship between electrical conduction and heat diffusion, can be derived from the basic principle.   |  |  |
|   |             | 2nd   | Bloch theorem, polarization and dielectric factors    |  | Learn about the basis of electromagnetism by focusing on the Bloch function, which shows the electronic state of solids in crystals and understand the definition of polarization and dielectric factors. |  |  |
|   |             | 3rd   | The Clausius–Mossotti equation                        |  | Can derive the Clausius–Mossotti equation, which is the equation of polarization and dielectric constant.   |  |  |
|   |             | 4th   | Electronic polarization                               |  | Can discuss on the electronic polarization quantitative.  |  |  |
|   |             | 5th   | Ion polarization                                      |  | Can handle ion polarization quantitatively and learn about LST equations and residual lines.  |  |  |
|   |             | 6th   | Orientation polarization and the Langevin function    |  | Can handle the orientation polarization quantitatively and understand the characteristics of the Langevin function which is used in orientation polarization.   |  |  |
|   |             | 7th   | Complex permittivity and dielectric loss              |  | Understand the concept of complex permittivity, and the fact that imaginary components are deeply involved in dielectric loss.  |  |  |
|   |             | 8th   | Midterm test  |  | Score 60 or more marks.   |  |  |
|   | 4th Quarter | 9th   | Classification of magnetization and magnetic material |  | Review the relationship between magnetization, magnetic field and magnetic flux density, and learn about the characteristics of the five types of magnetic materials.                                     |  |  |
|   |             | 10th  | Factors of magnetism                                  |  | Learn about the angular momentum caused by orbital motion and the angular momentum caused by spin, which are the factors of magnetism, and learn about the the Bohr magneton and the Landé g-factor.      |  |  |

|  |  |      |  |   |
|--|--|------|--|---|
|  |  | 11th | Five types of magnetic materials, magnetic anisotropy and structure of magnetic domain | Can classify five types of magnetic materials, learn about magnetic anisotropy and structure of magnetic domain, and understand the causes of hysteresis properties in the magnetization curve. |
|  |  | 12th | The temperature characteristics of magnetic susceptibility                             | Can derive the Curie law in paramagnetic and Curie Weiss in ferromagnetic.  |
|  |  | 13th | Application of magnetic materials  | Learn about the characteristics of iron-core and permanent magnet materials.  |
|  |  | 14th | History of magnetic materials research and topics on magnetic materials                | Learn about the history of the development of magnetic materials in Japan, and learn about the applications of different magnetic materials.  |
|  |  | 15th | Review   | Review the content so far.  |
|  |  | 16th | Final exam   | Score 60 or more marks.   |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |             |  |                                |  |   |  |  |
|--|-------------|--|--------------------------------|--|---|--|--|
| Akashi College   |             | Year   | 2023                           |  | Course Title  | Applied Physics II   |  |
| Course Information   |             |  |                                |  |   |  |  |
| Course Code  |             | 5429   |                                | Course Category  |   | Specialized / Compulsory   |  |
| Class Format   |             | Lecture  |                                | Credits  |   | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                | Student Grade  |   | 4th  |  |
| Term   |             | Second Semester  |                                | Classes per Week   |   | 2  |  |
| Textbook and/or Teaching Materials   |             |  |                                |  |   |  |  |
| Instructor   |             | NAKANISHI Hiroshi  |                                |  |   |  |  |
| Course Objectives  |             |  |                                |  |   |  |  |
| (1) Understand the basics of how to handle vibration phenomena in mechanics.<br>(2) Understand the basics of optics.<br>(3) Understand the basics of thermodynamics.<br>(4) Conduct experiments and compile their content in a report. |             |  |                                |  |   |  |  |
| Rubric   |             |  |                                |  |   |  |  |
|  |             | Ideal Level  |                                | Standard Level   |   | Unacceptable Level   |  |
| Achievement 1  |             | Can explain the basic concepts of vibration phenomena correctly and apply them to specific questions accurately.   |                                | Can explain the basic concepts of vibration phenomena and apply them to specific questions.          |   | Cannot explain the basic concepts of vibration phenomena or apply them to specific questions.          |  |
| Achievement 2  |             | Can explain the basic concepts of optics correctly and apply them to specific questions accurately.  |                                | Can explain the basic concepts of optics and apply them to specific questions.                       |   | Cannot explain the basic concepts of optics or apply them to specific questions.                       |  |
| Achievement 3  |             | Can explain the basic concepts of thermodynamics correctly and apply them to specific questions accurately.  |                                | Can explain the basic concepts of thermodynamics and apply them to specific questions.               |   | Cannot explain the basic concepts of thermodynamics or apply them to specific questions.               |  |
| Achievement 4  |             | Can give accurate insight into the experiments conducted by themselves and summarize the results appropriately in a report.  |                                | Can give insight into the experiments conducted by themselves and summarize the results in a report. |   | Cannot give insight into the experiments conducted by themselves or summarize the results in a report. |  |
| Assigned Department Objectives   |             |  |                                |  |   |  |  |
| Teaching Method  |             |  |                                |  |   |  |  |
| Outline  |             | Among the major fields in classical physics, this course will lecture on vibration in mechanics, optics, and thermodynamics. It will also involve mechanical measurement experiments.  |                                |  |   |  |  |
| Style  |             | Regular classes will be taught in a lecture style, and there will also be exercises and quizzes. In addition, there will be two classes to conduct experiments.  |                                |  |   |  |  |
| Notice   |             | Instead of learning each knowledge (the result of applying the law to a particular situation, how to solve the problem) by memorizing it individually, students should understand the laws that govern them (including being able to apply them to specific situations). Also, students should be aware of the relationships between the various laws, and try to understand concepts in physics systematically.<br>Students can earn extra points by submitting voluntary assignments, and lose their points depending on their attitude, etc. in the class.<br>The schedule of the experiment may be changed depending on the usage of the laboratory, etc.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |                                |  |   |  |  |
| Characteristics of Class / Division in Learning  |             |  |                                |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT  |                                | <input checked="" type="checkbox"/> Applicable to Remote Class                                       |   | <input type="checkbox"/> Instructor Professionally Experienced   |  |
|  |             |  |                                |  |   |  |  |
| Course Plan  |             |  |                                |  |   |  |  |
|  |             |  | Theme                          |  | Goals   |  |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st  | Several topics about vibration |  | Learn about damped vibration.   |  |  |
|  |             | 2nd  | Several topics about vibration |  | Learn about forced vibration.   |  |  |
|  |             | 3rd  | Several topics about vibration |  | Learn about coupled vibration.  |  |  |
|  |             | 4th  | Basics in optics               |  | Learn the basics of geometrical optics.   |  |  |
|  |             | 5th  | Basics in optics               |  | Learn the basics of light as a wave.  |  |  |
|  |             | 6th  | Basics in optics               |  | Learn about interference.   |  |  |
|  |             | 7th  | Basics in optics               |  | Learn about diffraction.  |  |  |
|  |             | 8th  | Midterm exam                   |  |   |  |  |
|  | 4th Quarter | 9th  | Mechanical experiments         |  | Learn how to conduct and report experiments on the theme of mechanical measurement. |  |  |
|  |             | 10th   | Mechanical experiments         |  | Learn how to conduct and report experiments on the theme of mechanical measurement. |  |  |
|  |             | 11th   | Basics in thermodynamics       |  | Learn the basics of thermodynamics.   |  |  |
|  |             | 12th   | Basics in thermodynamics       |  | Learn how to handle specific heat.  |  |  |
|  |             | 13th   | Basics in thermodynamics       |  | Learn how to handle the Carnot cycle.   |  |  |
|  |             | 14th   | Basics in thermodynamics       |  | Learn about the second law of thermodynamics.                                       |  |  |
|  |             | 15th   | Basics in thermodynamics       |  | Learn about the irreversible change.  |  |  |
|  |             | 16th   | Final exam                     |  |   |  |  |



| Evaluation Method and Weight (%) |             |                       |        |       |
|----------------------------------|-------------|-----------------------|--------|-------|
|                                  | Examination | Exercise / Short test | Report | Total |
| Subtotal                         | 54          | 36                    | 10     | 100   |
| Basic Proficiency                | 0           | 0                     | 0      | 0     |
| Specialized Proficiency          | 54          | 36                    | 10     | 100   |
| Cross Area Proficiency           | 0           | 0                     | 0      | 0     |

|   |             |   |  |   |   |  |  |
|---|-------------|---|--|---|---|--|--|
| Akashi College  |             | Year  | 2023   |   | Course Title  | Transient Analysis on Electric Circuits  |  |
| Course Information  |             |   |  |   |   |  |  |
| Course Code   |             | 5430  |  | Course Category   |   | Specialized / Compulsory   |  |
| Class Format  |             | Lecture   |  | Credits   |   | School Credit: 1   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade   |   | 4th  |  |
| Term  |             | First Semester  |  | Classes per Week  |   | 2  |  |
| Textbook and/or Teaching Materials  |             |   |  |   |   |  |  |
| Instructor  |             | SUYAMA Taikei   |  |   |   |  |  |
| Course Objectives   |             |   |  |   |   |  |  |
| Understand the basic questions and solutions for transient phenomena. Understand not only mathematical interpretation but also physical meaning. Three types of circuits will be covered:<br>(1) Single-energy circuits (R-L circuits, R-C circuits)<br>Understand and solve single energy circuits.<br>(2) Multiple-energy circuits (R-L-C circuits)<br>Multiple types of energy questions. Basic design knowledge of oscillation circuits.<br>(3) Distributed-element circuits<br>Understand the basic properties and the association with real-world lines such as communication lines and transmission lines. |             |   |  |   |   |  |  |
| Rubric  |             |   |  |   |   |  |  |
|   |             | Ideal Level   |  | Standard Level  |   | Unacceptable Level   |  |
| Achievement 1   |             | Single-energy circuits (R-L circuits, R-C circuits): Understand the questions and solutions of a single-energy circuit, and solve real-world questions.   |  | Single-energy circuits (R-L circuits, R-C circuits): Understand the questions and solutions of single-energy circuits.                                      |   | Single-energy circuits (R-L circuits, R-C circuits): Do not understand the questions and solutions of single-energy circuits.                                      |  |
| Achievement 2   |             | Multiple-energy circuits (R-L-C circuits): Can solve multiple types of energy questions, as well as the basic design of oscillation circuits.   |  | Multiple-energy circuits (R-L-C circuits): Understand multiple types of energy problems, as well as the basic design of oscillation circuits.               |   | Multiple-energy circuits (R-L-C circuits): Do not understand multiple types of energy problems or the basic design of oscillation circuits.                        |  |
| Achievement 3   |             | Distributed-element circuits: Understand the basic properties and the association with real-world lines such as communication lines and transmission lines, and solve the problems.   |  | Distributed-element circuits: Understand the basic properties and the association with real-world lines such as communication lines and transmission lines. |   | Distributed-element circuits: Do not understand the basic properties and the association with real-world lines such as communication lines and transmission lines. |  |
| Assigned Department Objectives  |             |   |  |   |   |  |  |
| Teaching Method   |             |   |  |   |   |  |  |
| Outline   |             | In this course, we will clarify the difference between steady-state and transient phenomena, and learn about the transient phenomena of single- and multiple-energy circuits and distributed-element circuits. We will describe how to solve differential equations using Laplace transform for such transient phenomena.   |  |   |   |  |  |
| Style   |             | Students who miss 1/3 or more of classes will not be eligible for evaluation.<br>100% on periodic exams.<br>The minimum score for a pass will be 60 marks on the above exams.<br>The criteria for a pass is the following three points:<br>(1) Understand the basic questions and solutions for transient phenomena.<br>(2) Understand and can analyze transient phenomena in single- and multiple-energy circuits and distributed-element circuits<br>(3) Understand not only mathematical interpretation but also physical meaning. |  |   |   |  |  |
| Notice  |             | Since the course will mainly involve solving differential equations using Laplace transform, students need to study the Laplace transform and inverse conversions of various mathematical functions.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade.  |  |   |   |  |  |
| Characteristics of Class / Division in Learning   |             |   |  |   |   |  |  |
| <input type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT   |  | <input type="checkbox"/> Applicable to Remote Class   |   | <input type="checkbox"/> Instructor Professionally Experienced   |  |
|   |             |   |  |   |   |  |  |
| Course Plan   |             |   |  |   |   |  |  |
|   |             |   | Theme  |   | Goals   |  |  |
| 1st Semester  | 1st Quarter | 1st   | The basics of transient phenomena and question solving<br>Describe the basic concepts of transient phenomena and provide learning guidance on how to handle them. Explain how to solve transient phenomena questions in a single-energy R-L circuit. |   | Can explain how to solve transient phenomena questions in a single-energy R-L circuit.  |  |  |
|   |             | 2nd   | Transient phenomena in single-energy circuits (1)<br>In general, transient phenomena in R-L or R-C circuits do not cause vibrations because only one of the electrostatic or magnetic field energies exists. Learn about such circuits.              |   | Understand that a transient phenomenon in an R-L or R-C circuit does not cause vibration because only one of the electrostatic or magnetic field energies exists. |  |  |
|   |             | 3rd   | Transient phenomena in single-energy circuits (2)<br>Following the previous week, explain how to solve basic questions using Laplace transforms that are helpful for handling initial values.  |   | Use the Laplace transform to solve basic questions.   |  |  |

|  |             |      |   |  |
|--|-------------|------|---|--|
|  |             | 4th  | Transient phenomena in single-energy circuits (3)<br>Learn about transient phenomena in single-energy circuits when an alternating electromotive force is applied.  | Understand transient phenomena in a single energy circuit when an alternating electromotive force is applied.  |
|  |             | 5th  | Definition of Laplace transforms, theorem and inverse conversion of Laplace transforms<br>Define Laplace transforms and provides guidance on how to use it to solve questions. Explain and do exercises on the various theorem and the inverse conversion of the Laplace transform that is necessary to solve actual questions.                     | Can use the various theorems and the inverse conversion of the Laplace transform.  |
|  |             | 6th  | The basics of circuit analysis using the Laplace transform<br>For a basic circuit containing L or C, explain how to use the Laplace transform to determine the general solution for voltage and current.  | Can find the general solution for voltage and current by using the Laplace transform.  |
|  |             | 7th  | Exercise<br>Do exercises on transient phenomena in single-energy circuits.  | Exercise<br>Do exercises on transient phenomena in single-energy circuits.   |
|  |             | 8th  | Transient phenomena in multiple-energy circuits (1)<br>In a circuit where magnetic field energy and electrostatic energy both exist, in other words, a circuit that consists of L, C, and R, the differential equations will become second order ones, and there will be cases in which vibrations occur and others not. Learn about such circuits. | Understand the basics of transient phenomena in multiple-energy circuits, and how to solve them using differential equations.  |
|  | 2nd Quarter | 9th  | Transient phenomena in multiple-energy circuits (2)<br>Learn about transient phenomena of discharge in multiple-energy LRC circuits when a DC electromotive force is applied.   | Understand transient phenomena of discharge in multiple-energy LRC circuits when a DC electromotive force is applied.  |
|  |             | 10th | Transient phenomena in multiple-energy circuits (3)<br>Learn about transient phenomena when an alternating electromotive force is applied to a multiple-energy LRC circuit.   | Understand transient phenomena when an alternating electromotive force is applied to a multiple-energy LRC circuit.  |
|  |             | 11th | The basics of the steady-state and transient phenomena in distributed-element circuits.<br>Derive the basic equations of distributed-element circuits during steady-state and transient phenomena and explain basic concepts and interpretation.  | The basics of the steady-state and transient phenomena in distributed-element circuits.<br>Can derive the basic equations of distributed-element circuits during steady-state and transient phenomena and explain basic concepts and interpretation. |
|  |             | 12th | Transient phenomena in distributed-element circuits (1)<br>Introduce solutions using the Laplace transform for infinite, lossless, and strain-free lines.   | Transient phenomena in distributed-element circuits (1)<br>Understand the solution of infinite, lossless, and strain-free lines using the Laplace transform.   |
|  |             | 13th | Transient phenomena in distributed-element circuits (2)<br>Following the previous week, learn how to solve the transient phenomena in distributed-element circuits using the Laplace transform. Find the wave propagation speed on the line.  | Learn how to solve the transient phenomena in distributed-element circuits using the Laplace transform. Can find the wave propagation speed on the line.   |
|  |             | 14th | Exercise<br>Do exercises on multiple-energy circuits and distributed-element circuits.  | Exercise<br>Do exercises on multiple-energy circuits and distributed-element circuits.   |
|  |             | 15th | Total review  | Total review   |
|  |             | 16th | Final exam  | Final exam   |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|   |  |                                       |   |   |   |                        |
|---|--|---------------------------------------|---|---|---|------------------------|
| Akashi College  |  | Year                                  | 2023  |   | Course Title  | Electronic Circuits II |
| Course Information  |  |                                       |   |   |   |                        |
| Course Code   | 5431   |                                       |   | Course Category   | Specialized / Compulsory  |                        |
| Class Format  | Lecture  |                                       |   | Credits   | School Credit: 1  |                        |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       |   | Student Grade   | 4th   |                        |
| Term  | Second Semester  |                                       |   | Classes per Week  | 2   |                        |
| Textbook and/or Teaching Materials  |  |                                       |   |   |   |                        |
| Instructor  | OHMUKAI Masato   |                                       |   |   |   |                        |
| Course Objectives   |  |                                       |   |   |   |                        |
| The goal is to achieve the following competencies:<br>1) Understand the characteristics of active elements, accurately understand the principles and properties of basic circuits using them, and can analyze these circuits.<br>2) Accurately understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.<br>3) Accurately understand the principles and properties of circuits using arithmetic amplifiers, can analyze and design these circuits.<br>4) Accurately understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits. |  |                                       |   |   |   |                        |
| Rubric  |  |                                       |   |   |   |                        |
|   | Ideal Level  |                                       | Standard Level  |   | Unacceptable Level  |                        |
| Achievement 1   | Understand the characteristics of active elements, accurately understand the principles and properties of basic circuits using them, and can analyze these circuits.   |                                       | Understand the characteristics of active elements, understand the principles and properties of basic circuits using them, and can analyze these circuits. |   | Do not understand the characteristics of active elements or the principles and properties of basic circuits using them. |                        |
| Achievement 2   | Accurately understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.   |                                       | Understand the principles and properties of negative-feedback circuits and various amplifier circuits, and can analysis these circuits.                   |   | Do not understand the principles and properties of negative-feedback circuits and various amplifier circuits.           |                        |
| Achievement 3   | Understand the principles and properties accurately, can analyze and design circuits using arithmetic amplifiers.  |                                       | Understand the principles and properties, can analyze and design circuits using arithmetic amplifiers.  |   | Do not understand the principles and properties of circuits using arithmetic amplifiers.                                |                        |
|   | Accurately understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits.   |                                       | Understand the principles and properties of oscillator, modulator, and demodulator circuits, and can analyze and design these circuits.                   |   | Do not understand the principles and properties of oscillator, modulator, and demodulator circuits.                     |                        |
| Assigned Department Objectives  |  |                                       |   |   |   |                        |
| Teaching Method   |  |                                       |   |   |   |                        |
| Outline   | We will explain the basics of analogue electronic circuits using active elements such as diodes, transistors, field effect transistors (FET), and operation amplifiers.  |                                       |   |   |   |                        |
| Style   | Classes will be held in a lecture style, mainly by explaining content following the textbook. Students will work on exercises and design assignments as appropriate.   |                                       |   |   |   |                        |
| Notice  | Students are required to learn in an active manner so they can design circuits themselves. If possible, they should construct the circuit they designed and study its operation.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade. |                                       |   |   |   |                        |
| Characteristics of Class / Division in Learning   |  |                                       |   |   |   |                        |
| <input type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class                    | <input type="checkbox"/> Instructor Professionally Experienced  |                        |
|   |  |                                       |   |   |   |                        |
| Course Plan   |  |                                       |   |   |   |                        |
|   |  |                                       | Theme   | Goals   |   |                        |
| 2nd Semester<br>r   | 3rd Quarter  | 1st                                   | Differential amplifier circuit 1  | Understand the characteristics of differential amplifier circuits.                |   |                        |
|   |  | 2nd                                   | Differential amplifier circuit 2  | Understand how to design differential amplifier circuits.                         |   |                        |
|   |  | 3rd                                   | Voltage follower circuit  | Understand the emitter follower and source follower circuits.                     |   |                        |
|   |  | 4th                                   | Characteristic of an operation amplifier  | Understand the characteristics of an operation amplifier.                         |   |                        |
|   |  | 5th                                   | Basic amplifier circuit of an operation amplifier   | Understand the basic design of an amplifier circuit using an operation amplifier. |   |                        |
|   |  | 6th                                   | Application circuit of an operation amplifier   | Understand various application circuits using operation amplifier.                |   |                        |
|   |  | 7th                                   | RC oscillator circuit   | Understand the RC oscillator circuit used as a low-frequency oscillator.          |   |                        |
|   |  | 8th                                   | Midterm exam  |   |   |                        |
|   | 4th Quarter  | 9th                                   | LC oscillator circuit   | Understand the LC and crystal oscillator circuits, such as Hartlev and Colpitts.  |   |                        |

|                                  |             |   |   |
|----------------------------------|-------------|---|---|
|                                  | 10th        | Variable frequency oscillator circuit     | Understand the oscillator circuit, which allows the oscillation frequency to be variable.         |
|                                  | 11th        | The basics of modulation and demodulation | Understand the relationship between modulation and demodulation and the features of AM, FM, etc.  |
|                                  | 12th        | Modulation circuit                        | Understand the AM and FM modulation schemes.  |
|                                  | 13th        | Demodulator circuit 1                     | Understand the AM demodulation scheme.  |
|                                  | 14th        | Demodulator circuit 2                     | Understand the FM demodulation scheme.  |
|                                  | 15th        | Power circuit                             | Understand the basics of power circuits used in electronic circuits and regulated power circuits. |
|                                  | 16th        | Final exam                                |   |
| Evaluation Method and Weight (%) |             |   |   |
|                                  | Examination | Other                                     | Total   |
| Subtotal                         | 70          | 30  | 100   |
| Basic Proficiency                | 0           | 0   | 0   |
| Specialized Proficiency          | 70          | 30  | 100   |
| Cross Area Proficiency           | 0           | 0   | 0   |

|   |             |  |   |   |  |  |  |
|---|-------------|--|---|---|--|--|--|
| Akashi College  |             | Year   | 2023                                    |   | Course Title   | Control Engineering I  |  |
| Course Information  |             |  |   |   |  |  |  |
| Course Code   |             | 5432   |   | Course Category   |  | Specialized / Compulsory   |  |
| Class Format  |             | Lecture  |   | Credits   |  | Academic Credit: 2   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade   |  | 4th  |  |
| Term  |             | Second Semester  |   | Classes per Week  |  | 2  |  |
| Textbook and/or Teaching Materials  |             |  |   |   |  |  |  |
| Instructor  |             | ENOMOTO Ryuji  |   |   |  |  |  |
| Course Objectives   |             |  |   |   |  |  |  |
| 1. Can use transfer functions to represent the input/output characteristics of a system.<br>2. Understand the system representation using the block diagram.<br>3. Can explain transient properties using step response.<br>4. Can explain steady-state properties using the steady-state deviation.<br>5. Can explain frequency characteristics using a Bode plot.<br>6. Can explain the stability criterion of the feedback control system (Nyquist stability criterion). |             |  |   |   |  |  |  |
| Rubric  |             |  |   |   |  |  |  |
|   |             | Ideal Level  |   | Standard Level  |  | Unacceptable Level   |  |
| Achievement 1   |             | Can derive a transfer function correctly.  |   | Can explain how to derive a transfer function.  |  | Do not know how to derive a transfer function.   |  |
| Achievement 2   |             | Can simplify a block diagram consisting of series, parallel, and feedback bonds.   |   | Can simplify serial, parallel, and feedback bonds in a block diagram.                     |  | Do not understand the components of a block diagram.                                       |  |
| Achievement 3   |             | Can explain all the indicators for evaluating transient properties in step response.   |   | Can explain some of the indicators for evaluating transient properties in step response.  |  | Cannot explain the indicators for evaluating transient properties in step response at all. |  |
| Achievement 4   |             | Can derive the calculation method of steady-state deviation and can calculate the steady-state deviation accurately.   |   | Know the calculation method (formula) of stead-state deviation.                           |  | Cannot explain steady-state deviation.   |  |
| Achievement 5   |             | Can express the frequency response of a system obtained by combining the basic elements, in a Bode plot.   |   | Can express the frequency response of some of the basic elements in a Bode plot.          |  | Do not know a Bode plot.   |  |
| Achievement 6   |             | Can determine the stability of the feedback control system accurately using Nyquist stability criterion.   |   | Can explain the policy for stability determination using the Nyquist stability criterion. |  | Cannot explain the Nyquist stability criterion.  |  |
| Assigned Department Objectives  |             |  |   |   |  |  |  |
| Teaching Method   |             |  |   |   |  |  |  |
| Outline   |             | While we are not very aware of in our daily lives, almost every device, including cars, air conditioners, and refrigerators, have a automatic control function. In this lecture, students will learn the basics of classical control, focusing on transfer functions and frequency response. In addition, students will deepen their understanding of the class content through exercises given as assignments as appropriate.   |   |   |  |  |  |
| Style   |             | The basics of transfer functions, block diagrams, time response, frequency response, and stability will be introduced.<br>In almost every lesson, students will be given an assignment to review the content of the class.   |   |   |  |  |  |
| Notice  |             | By thinking and solving the exercises by themselves, the students become familiar with the calculations. Basic knowledge of Laplace conversion and reverse conversion is the premise of this course. Since this subject offer credits, students may not be eligible for passing depending on the submission and content of the assignments. The specific conditions will be shown during the lecture. This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |   |   |  |  |  |
| Characteristics of Class / Division in Learning   |             |  |   |   |  |  |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input checked="" type="checkbox"/> Applicable to Remote Class                            |  | <input type="checkbox"/> Instructor Professionally Experienced                             |  |
|   |             |  |   |   |  |  |  |
| Course Plan   |             |  |   |   |  |  |  |
|   |             |  | Theme                                   |   | Goals  |  |  |
| 2nd Semester  | 3rd Quarter | 1st  | Introduction                            |   | Understand the objectives and the grading method, etc. of the course.<br>Can explain how feedback control works.   |  |  |
|   |             | 2nd  | Laplace transform and inverse transform |   | Can describe the expression of the Laplace transform.<br>Can calculate the inverse Laplace transform based on partial fraction decomposition or completing the square. |  |  |
|   |             | 3rd  | Modeling with differential equations.   |   | Can derive a model (differential equation) that represents the dynamic characteristics for a typical system.   |  |  |
|   |             | 4th  | Transfer functions                      |   | Can derive a transfer function using the Laplace transform.  |  |  |

|  |             |      |  |  |
|--|-------------|------|--|--|
|  |             | 5th  | Block diagrams                                   | Can simplify series, parallel, and feedback bonds.<br>Can simplify a block diagram consisting of the three bonds above.  |
|  |             | 6th  | Calculation of transient response                | Can describe the expression of the Laplace transform.<br>Can calculate the inverse Laplace transform based on partial fraction decomposition or completing the square. |
|  |             | 7th  | The basic elements and their time response       | Can explain the names of the six basic elements.<br>Can explain the characteristics of the basic elements in terms of time response.                                   |
|  |             | 8th  | Evaluation metric of the time response           | Can explain the evaluation metric of transient properties using step response.<br>Can explain steady-state deviation.<br>Can calculate steady-state deviation.         |
|  | 4th Quarter | 9th  | What is frequency response                       | Can explain the definition of frequency response.<br>Can explain the frequency transfer function and the correspondence between gain and phase.                        |
|  |             | 10th | Vector locus                                     | Can explain the characteristics of the vector locus of basic elements.<br>Can draw a vector locus  |
|  |             | 11th | Bode plots                                       | Can explain the characteristics of Bode plots of a differential, integral, first-order lag factor, and second-order lag factor.  |
|  |             | 12th | Combining Bode plots                             | Can combine Bode plots.  |
|  |             | 13th | Stability of a control system                    | Can explain the stability condition.<br>Can determine the stability from the position of the poles of the transfer function.   |
|  |             | 14th | Stability criterion of a feedback control system | Can determine the stability of a feedback control system using Nyquist stability criterion.  |
|  |             | 15th | Review   | Review the content of classes in the second half of the semester.  |
|  |             | 16th | Final exam                                       |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Exercise | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|----------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 70          | 30       | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0        | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 70          | 30       | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0        | 0                                   | 0        | 0         | 0     | 0     |

|   |             |   |                                      |  |  |   |  |
|---|-------------|---|--------------------------------------|--|--|---|--|
| Akashi College  |             | Year  | 2023                                 |  | Course Title   | Experiments of Electrical Engineering I A                                 |  |
| Course Information  |             |   |                                      |  |  |   |  |
| Course Code   |             | 5433  |                                      | Course Category  |  | Specialized / Compulsory  |  |
| Class Format  |             | Experiment  |                                      | Credits  |  | School Credit: 2  |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                      | Student Grade  |  | 4th   |  |
| Term  |             | First Semester  |                                      | Classes per Week   |  | 4   |  |
| Textbook and/or Teaching Materials  |             |   |                                      |  |  |   |  |
| Instructor  |             | HIROTA Atsushi,TERASAWA Shinichi,HIRANO Masatsugu,NOMURA Hayato   |                                      |  |  |   |  |
| Course Objectives   |             |   |                                      |  |  |   |  |
| 1. Can actively participate in experiments by group and carry out experiments in cooperation with the group members.<br>2. Can conduct experiments in a planned manner based on the basic ability, and analyze the results of an experiment.<br>3. Can summarize the results of a experiments in a report with correct writing expressions. |             |   |                                      |  |  |   |  |
| Rubric  |             |   |                                      |  |  |   |  |
|   |             | Ideal Level   |                                      | Standard Level   |  | Unacceptable Level  |  |
| Achievement 1   |             | Can actively participate in experiments by group and carry out experiments in cooperation with the group members.   |                                      | Can carry out experiments in cooperation with the group members.                         |  | Cannot carry out experiments.   |  |
| Achievement 2   |             | Can conduct experiments in a planned manner and analyze the results of an experiment.   |                                      | Can analyze the results of the experiments.  |  | Cannot analyze the results of an experiment.                              |  |
| Achievement 3   |             | Can summarize the results of an experiment in a report with correct writing expressions and submit in time.   |                                      | Can summarize the results of an experiment in a report with correct writing expressions. |  | Cannot summarize the results of an experiment in a report.                |  |
| Assigned Department Objectives  |             |   |                                      |  |  |   |  |
| Teaching Method   |             |   |                                      |  |  |   |  |
| Outline   |             | The goal of this course is to acquire the ability to solve new problems practically while understanding and confirming the knowledge and techniques of electrical information acquired so far through experimental themes. Furthermore, the course requires students to submit reports on each theme, in order to help them learn necessary writing expressions for scientific reports. The experiments will be conducted by groups, to help students develop autonomy, coordination, planning, and leadership. Hirano will supervise the measurement circuits; Kami, controls; Nomura and Terazawa, circuits and microcomputers; and Hirota, power circuits. The experiments in weeks 2 to 5 of the first semester and week 4 of the second semester will be supervised by persons engaged in the development of electronic devices and other activities in a company. |                                      |  |  |   |  |
| Style   |             | Students will conduct experiments on themes closely related to the electrical and electronic fields, such as measurement, circuits, control, and microcomputers, in groups of four to five, and submit a report on them. They will actively conduct experiments give, based on their own necessary preparation and pre-study, and guidance provided on the spot by the instructor of the experiment.  |                                      |  |  |   |  |
| Notice  |             | If all reports have not been received by the due date, students will not receive a passing grade. Students must clean the lab and put away the equipment. Precautions regarding the experiments will be given during the first week of the first and second semesters. Students have to participate in all experiments. Students will not be graded unless they have participated in all experiments.   |                                      |  |  |   |  |
| Characteristics of Class / Division in Learning   |             |   |                                      |  |  |   |  |
| <input type="checkbox"/> Active Learning  |             | <input checked="" type="checkbox"/> Aided by ICT  |                                      | <input checked="" type="checkbox"/> Applicable to Remote Class                           |  | <input checked="" type="checkbox"/> Instructor Professionally Experienced |  |
|   |             |   |                                      |  |  |   |  |
| Course Plan   |             |   |                                      |  |  |   |  |
|   |             |   | Theme                                |  | Goals  |   |  |
| 1st Semester  | 1st Quarter | 1st   | Experiment guidance                  |  | Understand the various precautions related to engineering experiments and the outline of the theme of each experiment. |   |  |
|   |             | 2nd   | FPGA1 (Circuit design)               |  | Understand logic circuit inputs using IDE (Integrated Development Environment).  |   |  |
|   |             | 3rd   | FPGA2 (emulator debug)               |  | Understand the simulation and debugging of logical circuits using the IDE (Integrated Development Environment).        |   |  |
|   |             | 4th   | FPGA3 (implementation and operation) |  | Understand circuit implementation in FPGA(Field Programmable Logic Array).   |   |  |
|   |             | 5th   | FPGA4 (evaluation)                   |  | Understand the operation, debugging, and evaluation of implementation circuitry with FPGAs.                            |   |  |
|   |             | 6th   | Report organization                  |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 7th   | Computer measurement I.              |  | Can perform waveform measurement and processing using a computer and measurement interface.                            |   |  |
|   |             | 8th   | Computer Measurement II.             |  | Can fabricate a stethoscope using a computer and an interface microphone for measurement.                              |   |  |
|   | 2nd Quarter | 9th   | Report organization                  |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 10th  | Electric motor speed control         |  | Understand how to control the speed of an electric motor.  |   |  |



|  |  |      |  |   |
|--|--|------|--|---|
|  |  | 11th | Direct current voltage stabilization circuit | Can investigate the characteristics of a voltage stable circuit in a rectification circuit. |
|  |  | 12th | Report organization                          | Can examine and compile the results of the experiment into a report.                        |
|  |  | 13th | Oscillation circuits                         | Can investigate various characteristics for various types of typical oscillation circuits.  |
|  |  | 14th | Low frequency amplifier characteristics      | Can examine the circuit operation and characteristics of the push-pull amplifier.           |
|  |  | 15th | Report organization                          | Can examine and compile the results of the experiment into a report.                        |
|  |  | 16th | No final exam                                |   |

#### Evaluation Method and Weight (%)

|                         | Report | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|--------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 80     | 0            | 0                                   | 20       | 0         | 0     | 100   |
| Basic Proficiency       | 0      | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 80     | 0            | 0                                   | 20       | 0         | 0     | 100   |
| Cross Area Proficiency  | 0      | 0            | 0                                   | 0        | 0         | 0     | 0     |

|   |             |  |                                       |  |  |   |  |
|---|-------------|--|---------------------------------------|--|--|---|--|
| Akashi College  |             | Year   | 2023                                  |  | Course Title   | Experiments of Electrical Engineering I B                                 |  |
| Course Information  |             |  |                                       |  |  |   |  |
| Course Code   |             | 5434   |                                       | Course Category  |  | Specialized / Compulsory  |  |
| Class Format  |             | Experiment   |                                       | Credits  |  | School Credit: 2  |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade  |  | 4th   |  |
| Term  |             | Second Semester  |                                       | Classes per Week   |  | 4   |  |
| Textbook and/or Teaching Materials  |             |  |                                       |  |  |   |  |
| Instructor  |             | HIROTA Atsushi,TERASAWA Shinichi,HIRANO Masatsugu,   |                                       |  |  |   |  |
| Course Objectives   |             |  |                                       |  |  |   |  |
| 1. Can actively participate in experiments by group and carry out experiments in cooperation with the group members.<br>2. Can conduct experiments in a planned manner based on the basic ability, and analyze the results of an experiment.<br>3. Can summarize the results of a experiments in a report with correct writing expressions. |             |  |                                       |  |  |   |  |
| Rubric  |             |  |                                       |  |  |   |  |
|   |             | Ideal Level  |                                       | Standard Level   |  | Unacceptable Level  |  |
| Achievement 1   |             | Can actively participate in experiments by group and carry out experiments in cooperation with the group members.  |                                       | Can carry out experiments in cooperation with the group members.                         |  | Cannot carry out experiments.   |  |
| Achievement 2   |             | Can conduct experiments in a planned manner and analyze the results of an experiment.  |                                       | Can analyze the results of the experiments.  |  | Cannot analyze the results of an experiment.                              |  |
| Achievement 3   |             | Can summarize the results of an experiment in a report with correct writing expressions and submit in time.  |                                       | Can summarize the results of an experiment in a report with correct writing expressions. |  | Cannot summarize the results of an experiment in a report.                |  |
| Assigned Department Objectives  |             |  |                                       |  |  |   |  |
| Teaching Method   |             |  |                                       |  |  |   |  |
| Outline   |             | The goal of this course is to acquire the ability to solve new problems practically while understanding and confirming the knowledge and techniques of electrical information acquired so far through experimental themes. Furthermore, the course requires students to submit reports on each theme, in order to help them learn necessary writing expressions for scientific reports. The experiments will be conducted by groups, to help students develop autonomy, coordination, planning, and leadership. Kami will supervise controls; Terazawa, microcomputers; and Hirota, power circuits. The experiments in weeks 2 to 4 of the second semester will be supervised by persons engaged in the development of electronic devices and other activities in a company. |                                       |  |  |   |  |
| Style   |             | Students will conduct experiments on themes closely related to the electrical and electronic fields, such as measurement, circuits, control, and microcomputers, in groups of four to five, and submit a report on them. They will actively conduct experiments give, based on their own necessary preparation and pre-study, and guidance provided on the spot by the instructor of the experiment.   |                                       |  |  |   |  |
| Notice  |             | If all reports have not been received by the due date, students will not receive a passing grade. Students must clean the lab and put away the equipment. Precautions regarding the experiments will be given during the first week of the first and second semesters. Students have to participate in all experiments. Students will not be graded unless they have participated in all experiments.  |                                       |  |  |   |  |
| Characteristics of Class / Division in Learning   |             |  |                                       |  |  |   |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input checked="" type="checkbox"/> Aided by ICT   |                                       | <input checked="" type="checkbox"/> Applicable to Remote Class                           |  | <input checked="" type="checkbox"/> Instructor Professionally Experienced |  |
|   |             |  |                                       |  |  |   |  |
| Course Plan   |             |  |                                       |  |  |   |  |
|   |             |  | Theme                                 |  | Goals  |   |  |
| 2nd Semester  | 3rd Quarter | 1st  | Experiment guidance                   |  | Understand the various precautions related to engineering experiments and the outline of the theme of each experiment. |   |  |
|   |             | 2nd  | Microcomputer control I               |  | Can build control systems using embedded microcomputers.   |   |  |
|   |             | 3rd  | Microcomputer control II              |  | Can build control systems using embedded microcomputers.   |   |  |
|   |             | 4th  | Microcomputer control III             |  | Can build control systems using embedded microcomputers.   |   |  |
|   |             | 5th  | Report organization                   |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 6th  | Transistor amplifier                  |  | Can design a transistor amplifier  |   |  |
|   |             | 7th  | Report organization                   |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 8th  | Equivalent circuit of the transformer |  | Can determine the equivalent circuit and constant of the transformer.  |   |  |
|   | 4th Quarter | 9th  | Report organization                   |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 10th   | PLC Sequence control I                |  | Understand the basics of PLC sequence control.   |   |  |
|   |             | 11th   | Report organization                   |  | Can examine and compile the results of the experiment into a report.   |   |  |
|   |             | 12th   | PLC Sequence control II               |  | Can construct PLC sequence control systems that meet the specified specifications.                                     |   |  |

|  |  |      |   |  |
|--|--|------|---|--|
|  |  | 13th | Report organization   | Can examine and compile the results of the experiment into a report.                       |
|  |  | 14th | Variable speed control of the inductive electric motor by means of a PWM inverter | Understand the principles of PWM inverters and speed control of inductive electric motors. |
|  |  | 15th | Summarizing and organizing  | Can summarize and organize the experiment.   |
|  |  | 16th | No final exam   |  |

|                                  |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|
| Evaluation Method and Weight (%) |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|

|                         | Report | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|--------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 80     | 0            | 0                                   | 20       | 0         | 0     | 100   |
| Basic Proficiency       | 0      | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 80     | 0            | 0                                   | 20       | 0         | 0     | 100   |
| Cross Area Proficiency  | 0      | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |   |                                       |  |  |   |
|--|---|---------------------------------------|--|--|---|
| Akashi College   |   | Year                                  | 2023   | Course Title   | Off-Campus Practical Training A   |
| Course Information   |   |                                       |  |  |   |
| Course Code  | 5435  |                                       | Course Category  | Specialized / Elective   |   |
| Class Format   | Practical training  |                                       | Credits  | School Credit: 1   |   |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 4th  |   |
| Term   | Year-round  |                                       | Classes per Week   | 1  |   |
| Textbook and/or Teaching Materials   |   |                                       |  |  |   |
| Instructor   | All faculty of the department   |                                       |  |  |   |
| Course Objectives  |   |                                       |  |  |   |
| (1) Can experience some of the actual technical activities related to engineering.<br>(2) Can use slides to report on the things they have experientially learned. |   |                                       |  |  |   |
| Rubric   |   |                                       |  |  |   |
|  | Ideal Level   |                                       | Standard Level   |  | Unacceptable Level  |
| Achievement 1  | Can experience some of the actual technical activities related to engineering collaboratively.  |                                       | Can experience some of the actual technical activities related to engineering.   |  | Cannot experience some of the actual technical activities related to engineering. |
| Achievement 2  | Can use slides to report on the things they have experientially learned, and be understood by others.   |                                       | Can use slides to report on the things they have experientially learned.   |  | Cannot use slides to report on the things they have experientially learned.       |
| Assigned Department Objectives   |   |                                       |  |  |   |
| Teaching Method  |   |                                       |  |  |   |
| Outline  | Internship is mainly held in companies, government agencies, non-profit corporations, universities, etc. in the fields of electrical and electronic engineering and information engineering. Through this experience, students gain a sense of practical technology and can exert the knowledge in further learning.  |                                       |  |  |   |
| Style  | Follow the guidance given by instructors at the internship destination.   |                                       |  |  |   |
| Notice   | Read the internship implementation guidelines carefully and stay in close contact with your year 4 class teacher.<br>Students should actively experience real-world technical activities.<br>Student need to be respectful of courtesies, attire, language, and other behaviors appropriate as an internee.<br>Students who spend less than 5 days or less than 32 hours (shortages within 2 hours may be replenished by such as reporting) will not be eligible for a passing grade. |                                       |  |  |   |
| Characteristics of Class / Division in Learning  |   |                                       |  |  |   |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |  | <input type="checkbox"/> Applicable to Remote Class                                      | <input type="checkbox"/> Instructor Professionally Experienced                    |
| Course Plan  |   |                                       |  |  |   |
|  |   |                                       | Theme  | Goals  |   |
| 1st Semester   | 1st Quarter   | 1st                                   | Guidance (at the end of first semester)  | Can understand the precautions of student training and the manners at the training site. |   |
|  |   | 2nd                                   | Intern (during summer vacation)  | Can experience some of the technical activities at the training site.                    |   |
|  |   | 3rd                                   | Same as above  | Same as above  |   |
|  |   | 4th                                   | Same as above  | Same as above  |   |
|  |   | 5th                                   | Same as above  | Same as above  |   |
|  |   | 6th                                   | Same as above  | Same as above  |   |
|  |   | 7th                                   | Same as above  | Same as above  |   |
|  |   | 8th                                   | Same as above  | Same as above  |   |
|  | 2nd Quarter   | 9th                                   | Same as above  | Same as above  |   |
|  |   | 10th                                  | Same as above  | Same as above  |   |
|  |   | 11th                                  | Same as above  | Same as above  |   |
|  |   | 12th                                  | Same as above  | Same as above  |   |
|  |   | 13th                                  | Same as above  | Same as above  |   |
|  |   | 14th                                  | Same as above  | Same as above  |   |
|  |   | 15th                                  | Internship reporting (done at the beginning of the second semester, grades will be announced in the middle of the second semester) | Can report the outcome of the internship using slides.                                   |   |
|  |   | 16th                                  | No final exam  |  |   |
| 2nd Semester   | 3rd Quarter   | 1st                                   |  |  |   |
|  |   | 2nd                                   |  |  |   |
|  |   | 3rd                                   |  |  |   |
|  |   | 4th                                   |  |  |   |
|  |   | 5th                                   |  |  |   |
|  |   | 6th                                   |  |  |   |
|  |   | 7th                                   |  |  |   |
|  |   | 8th                                   |  |  |   |

|  |                |      |  |  |
|--|----------------|------|--|--|
|  | 4th<br>Quarter | 9th  |  |  |
|  |                | 10th |  |  |
|  |                | 11th |  |  |
|  |                | 12th |  |  |
|  |                | 13th |  |  |
|  |                | 14th |  |  |
|  |                | 15th |  |  |
|  |                | 16th |  |  |

Evaluation Method and Weight (%)

|                         |                                    |        |              |       |
|-------------------------|------------------------------------|--------|--------------|-------|
|                         | Training destination<br>evaluation | Report | Presentation | Total |
| Subtotal                | 30                                 | 30     | 40           | 100   |
| Basic Proficiency       | 0                                  | 0      | 0            | 0     |
| Specialized Proficiency | 30                                 | 30     | 40           | 100   |
| Cross Area Proficiency  | 0                                  | 0      | 0            | 0     |

|  |   |                                       |  |  |   |
|--|---|---------------------------------------|--|--|---|
| Akashi College   |   | Year                                  | 2023   | Course Title   | Off-Campus Practical Training B   |
| Course Information   |   |                                       |  |  |   |
| Course Code  | 5436  |                                       | Course Category  | Specialized / Elective   |   |
| Class Format   | Practical training  |                                       | Credits  | School Credit: 2   |   |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 4th  |   |
| Term   | Year-round  |                                       | Classes per Week   | 2  |   |
| Textbook and/or Teaching Materials   |   |                                       |  |  |   |
| Instructor   | All faculty of the department   |                                       |  |  |   |
| Course Objectives  |   |                                       |  |  |   |
| (1) Can experience some of the actual technical activities related to engineering.<br>(2) Can use slides to report on the things they have experientially learned. |   |                                       |  |  |   |
| Rubric   |   |                                       |  |  |   |
|  | Ideal Level   |                                       | Standard Level   |  | Unacceptable Level  |
| Achievement 1  | Can experience some of the actual technical activities related to engineering collaboratively.  |                                       | Can experience some of the actual technical activities related to engineering. |  | Cannot experience some of the actual technical activities related to engineering. |
| Achievement 2  | Can use slides to report on the things they have experientially learned, and be understood by others.   |                                       | Can use slides to report on the things they have experientially learned.       |  | Cannot use slides to report on the things they have experientially learned.       |
| Assigned Department Objectives   |   |                                       |  |  |   |
| Teaching Method  |   |                                       |  |  |   |
| Outline  | Internship is mainly held in companies, government agencies, non-profit corporations, universities, etc. in the fields of electrical and electronic engineering and information engineering. Through this experience, students gain a sense of practical technology and can exert the knowledge in further learning.  |                                       |  |  |   |
| Style  | Follow the guidance given by instructors at the internship destination.   |                                       |  |  |   |
| Notice   | Read the internship implementation guidelines carefully and stay in close contact with your year 4 class teacher.<br>Students should actively experience real-world technical activities.<br>Student need to be respectful of courtesies, attire, language, and other behaviors appropriate as an internee.<br>Students who spend less than 9 days or less than 72 hours (shortages within 4 hours may be replenished by such as reporting) will not be eligible for a passing grade. |                                       |  |  |   |
| Characteristics of Class / Division in Learning  |   |                                       |  |  |   |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |  | <input type="checkbox"/> Applicable to Remote Class                                      | <input type="checkbox"/> Instructor Professionally Experienced                    |
| Course Plan  |   |                                       |  |  |   |
|  |   |                                       | Theme  | Goals  |   |
| 1st Semester   | 1st Quarter   | 1st                                   | Guidance (at the end of first semester)  | Can understand the precautions of student training and the manners at the training site. |   |
|  |   | 2nd                                   | Intern (during summer vacation)  | Can experience some of the technical activities at the training site.                    |   |
|  |   | 3rd                                   | Same as above  | Same as above  |   |
|  |   | 4th                                   | Same as above  | Same as above  |   |
|  |   | 5th                                   | Same as above  | Same as above  |   |
|  |   | 6th                                   | Same as above  | Same as above  |   |
|  |   | 7th                                   | Same as above  | Same as above  |   |
|  |   | 8th                                   | Same as above  | Same as above  |   |
|  | 2nd Quarter   | 9th                                   | Same as above  | Same as above  |   |
|  |   | 10th                                  | Same as above  | Same as above  |   |
|  |   | 11th                                  | Same as above  | Same as above  |   |
|  |   | 12th                                  | Same as above  | Same as above  |   |
|  |   | 13th                                  | Same as above  | Same as above  |   |
|  |   | 14th                                  | Same as above  | Same as above  |   |
|  |   | 15th                                  | Same as above  | Same as above  |   |
|  |   | 16th                                  | No final exam  |  |   |
| 2nd Semester   | 3rd Quarter   | 1st                                   | Intern (during summer vacation)  | Can experience some of the technical activities at the training site.                    |   |
|  |   | 2nd                                   | Same as above  | Same as above  |   |
|  |   | 3rd                                   | Same as above  | Same as above  |   |
|  |   | 4th                                   | Same as above  | Same as above  |   |
|  |   | 5th                                   | Same as above  | Same as above  |   |
|  |   | 6th                                   | Same as above  | Same as above  |   |
|  |   | 7th                                   | Same as above  | Same as above  |   |
|  |   | 8th                                   | Same as above  | Same as above  |   |

|  |                |      |  |  |
|--|----------------|------|--|--|
|  | 4th<br>Quarter | 9th  | Same as above  | Same as above  |
|  |                | 10th | Same as above  | Same as above  |
|  |                | 11th | Same as above  | Same as above  |
|  |                | 12th | Same as above  | Same as above  |
|  |                | 13th | Same as above  | Same as above  |
|  |                | 14th | Same as above  | Same as above  |
|  |                | 15th | Internship reporting (done at the beginning of the second semester, grades will be announced in the middle of the second semester) | Can report the outcome of the internship using slides. |
|  |                | 16th | No final exam  |  |

| Evaluation Method and Weight (%) |                                    |        |              |       |
|----------------------------------|------------------------------------|--------|--------------|-------|
|                                  | Training destination<br>evaluation | Report | Presentation | Total |
| Subtotal                         | 30                                 | 30     | 40           | 100   |
| Basic Proficiency                | 0                                  | 0      | 0            | 0     |
| Specialized Proficiency          | 30                                 | 30     | 40           | 100   |
| Cross Area Proficiency           | 0                                  | 0      | 0            | 0     |

|  |             |  |   |   |  |  |  |
|--|-------------|--|---|---|--|--|--|
| Akashi College   |             | Year   | 2023  |   | Course Title   | Computer Architecture  |  |
| Course Information   |             |  |   |   |  |  |  |
| Course Code  |             | 5437   |   | Course Category   |  | Specialized / Elective   |  |
| Class Format   |             | Lecture  |   | Credits   |  | Academic Credit: 2   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade   |  | 4th  |  |
| Term   |             | First Semester   |   | Classes per Week  |  | 2  |  |
| Textbook and/or Teaching Materials   |             |  |   |   |  |  |  |
| Instructor   |             | NOMURA Hayato  |   |   |  |  |  |
| Course Objectives  |             |  |   |   |  |  |  |
| 1. Understand the basic structure and functionality of a computer.<br>2. Understand the instruction set architecture.<br>3. Understand the control architecture.<br>4. Understand the memory architecture. |             |  |   |   |  |  |  |
| Rubric   |             |  |   |   |  |  |  |
|  |             | Ideal Level  |   | Standard Level  |  | Unacceptable Level   |  |
| Achievement 1  |             | Understand and can explain the basic structure and functionality of a computer.  |   | Understand the basic structure and functionality of a computer. |  | Do not understand the basic structure and functionality of a computer. |  |
| Achievement 2  |             | Understand and can explain the instruction architecture.   |   | Understand the instruction architecture.                        |  | Do not understand the instruction architecture.                        |  |
| Achievement 3  |             | Understand and can explain the control architecture.   |   | Understand the control architecture.                            |  | Do not understand the control architecture.                            |  |
|  |             | Understand and can explain the memory architecture.  |   | Understand the memory architecture.                             |  | Do not understand the memory architecture.                             |  |
| Assigned Department Objectives   |             |  |   |   |  |  |  |
| Teaching Method  |             |  |   |   |  |  |  |
| Outline  |             | In this course, students will learn the overview of the basic structure and functionality of a computer, and the theory of the CPU instruction set and executive control, memory, and input/output devices that make up a computer.  |   |   |  |  |  |
| Style  |             | Classes will mainly involve lectures, but if necessary, there will be exercises to improve understanding and retention.  |   |   |  |  |  |
| Notice   |             | This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports.<br>In this class, students are expected to take into account the contents of Operating System held in the first semester, and be conscious of how the CPU, which is the core hardware of a computer, execute a process.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |   |   |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |   |   |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input type="checkbox"/> Applicable to Remote Class             |  | <input type="checkbox"/> Instructor Professionally Experienced         |  |
|  |             |  |   |   |  |  |  |
| Course Plan  |             |  |   |   |  |  |  |
|  |             |  | Theme   |   | Goals  |  |  |
| 1st Semester<br>r  | 1st Quarter | 1st  | Overview of computer architecture   |   | Understand the basic structure and functionality of a computer.                      |  |  |
|  |             | 2nd  | Data representation (1): Fixed-point format, floating-point formats               |   | Understand the fixed-point and floating-point formats for representing numeric data. |  |  |
|  |             | 3rd  | Data representation (2): Text data, image data                                    |   | Understand the representation of text data and image data.                           |  |  |
|  |             | 4th  | Instruction architecture (1): Basic configuration, instruction set                |   | Understand the basic CPU configuration and instruction set.                          |  |  |
|  |             | 5th  | Instruction architecture (2): Instruction formats, addressing mode                |   | Understand the instruction format and addressing mode.                               |  |  |
|  |             | 6th  | Instruction architecture (3): Instruction execution sequence                      |   | Understand the order in which the instructions are executed.                         |  |  |
|  |             | 7th  | Control architecture (1): Control methods   |   | Understand the methods and pipelines for controlling instruction execution.          |  |  |
|  |             | 8th  | Midterm exam  |   | Midterm exam   |  |  |
|  | 2nd Quarter | 9th  | Control architecture (2): Interrupts  |   | Understand interrupts that change the flow of instruction execution.                 |  |  |
|  |             | 10th   | Memory architecture (1): Virtual memory   |   | Understand the mapping between physical and virtual memory.                          |  |  |
|  |             | 11th   | Memory architecture (2): Cache memory, paging                                     |   | Understand cache memory and paging.  |  |  |
|  |             | 12th   | Memory architecture (3): Address translation                                      |   | Understand the address translation.  |  |  |
|  |             | 13th   | Memory architecture (4): Segmentation method                                      |   | Understand the segmentation method.  |  |  |
|  |             | 14th   | Input/output architecture (1): Types of input/output devices and their management |   | Understand the types of input/output devices and their management.                   |  |  |
|  |             | 15th   | Input/output architecture (2): Input/output channels                              |   | Understand the input and output channels.  |  |  |
|  |             | 16th   | Final exam  |   | Final exam   |  |  |



| Evaluation Method and Weight (%) |             |              |                                     |          |           |       |       |
|----------------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
|                                  | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
| Subtotal                         | 60          | 0            | 0                                   | 0        | 0         | 40    | 100   |
| Basic Proficiency                | 30          | 0            | 0                                   | 0        | 0         | 20    | 50    |
| Specialized Proficiency          | 20          | 0            | 0                                   | 0        | 0         | 10    | 30    |
| Cross Area Proficiency           | 10          | 0            | 0                                   | 0        | 0         | 10    | 20    |

|  |             |  |   |  |   |   |  |
|--|-------------|--|---|--|---|---|--|
| Akashi College   |             | Year   | 2023  |  | Course Title  | Discrete Mathematics A  |  |
| Course Information   |             |  |   |  |   |   |  |
| Course Code  |             | 5438   |   | Course Category  |   | Specialized / Elective  |  |
| Class Format   |             | Lecture  |   | Credits  |   | School Credit: 1  |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  |   | 4th   |  |
| Term   |             | First Semester   |   | Classes per Week   |   | 2   |  |
| Textbook and/or Teaching Materials   |             |  |   |  |   |   |  |
| Instructor   |             | HAMADA Yukihiro  |   |  |   |   |  |
| Course Objectives  |             |  |   |  |   |   |  |
| [1] Can explain what counting is.<br>[2] Develop self-directed and continuous learning skills by mastering the arguments used in a mathematical proof.<br>[3] Can think in a recursive manner. |             |  |   |  |   |   |  |
| Rubric   |             |  |   |  |   |   |  |
|  |             | Ideal Level  |   | Standard Level   |   | Unacceptable Level  |  |
| Achievement 1  |             | Can explain sets and functions in a classified way, and determine whether the cardinalities of two sets are equal  |   | Can explain sets and a functions, and determines whether the cardinalities of two sets are equal   |   | Cannot explain a set and a function, and cannot determines whether the cardinalities of two sets are equal  |  |
| Achievement 2  |             | Can explain the propositions and predicates, and correctly write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods accurately.  |   | Can explain the propositions and predicates, and write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods. |   | Cannot explain the propositions and predicates, and write a mathematical proof using proof by contraposition and contradiction, and the mathematical induction methods. |  |
| Achievement 3  |             | Can define sets and functions recursively and correctly.   |   | Can define sets and functions recursively.   |   | Cannot define sets and functions recursively.   |  |
| Assigned Department Objectives   |             |  |   |  |   |   |  |
| Teaching Method  |             |  |   |  |   |   |  |
| Outline  |             | Discrete mathematics is a field of mathematics that deals with finite or discrete subjects, and one of the foundations of computer science. In this course, you will learn about sets and functions, mathematical induction and recursive definitions, Backus form and context-free grammar. |   |  |   |   |  |
| Style  |             | Classes will be held in a lecture style.   |   |  |   |   |  |
| Notice   |             | Make sure you understand the exact definition of the term and get an intuitive image from the formal description. Try to solve the examples or exercise problems yourself and score it against the answer. Students who miss 1/3 or more of classes will not be eligible for evaluation.     |   |  |   |   |  |
| Characteristics of Class / Division in Learning  |             |  |   |  |   |   |  |
| <input type="checkbox"/> Active Learning   |             | <input checked="" type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class   |   | <input type="checkbox"/> Instructor Professionally Experienced  |  |
|  |             |  |   |  |   |   |  |
| Course Plan  |             |  |   |  |   |   |  |
|  |             |  | Theme   |  | Goals   |   |  |
| 1st Semester   | 1st Quarter | 1st  | Basic form  |  | Can use form to represent sets or conditions.   |   |  |
|  |             | 2nd  | The relationship between the sets                             |  | Can perform various set operations and can use basic formulas.  |   |  |
|  |             | 3rd  | Function 1/2  |  | Can explain the basics function.  |   |  |
|  |             | 4th  | Function 2/2  |  | Can explain the associative law, inverse function and substitution for injection, surjection, bijection, composition of function, and composition.                        |   |  |
|  |             | 5th  | Infinite sets and cardinality 1/2                             |  | Can explain the cardinality of a set and can determine if the cardinalities of the two sets are equal.  |   |  |
|  |             | 6th  | Infinite sets and cardinality 2/2                             |  | Can explain the counting and cardinality of the continuum.  |   |  |
|  |             | 7th  | Propositions and proof by contradiction                       |  | Can explain the propositions and the converse, inverse, and contraposition. Can write mathematical proof using contraposition and proof by contradiction.                 |   |  |
|  |             | 8th  | Midterm exam<br>It is given during class.                     |  |   |   |  |
|  | 2nd Quarter | 9th  | Predicate   |  | Can explain a predicate (a function that takes only true or false as a value).  |   |  |
|  |             | 10th   | Propositional logic and its limitation in descriptive ability |  | Can explain the logical expression of a propositional logic and can represent a statement in a logical expression. Can explain the logical expression of predicate logic. |   |  |
|  |             | 11th   | Language  |  | Can explain the basics of formal languages.   |   |  |
|  |             | 12th   | Mathematical induction 1 of 2                                 |  | Can mathematical proof by induction   |   |  |
|  |             | 13th   | Mathematical induction 2 of 2                                 |  | Can write mathematical proof using the complete induction. Can explain the dual induction.  |   |  |

|                                  |             |              |                                      |          |           |  |       |
|----------------------------------|-------------|--------------|--------------------------------------|----------|-----------|--|-------|
|                                  |             | 14th         | Recursive definition                 |          |           | Can define sets, functions, etc. recursively.    |       |
|                                  |             | 15th         | Backus form and context-free grammar |          |           | Can handle Backus form and context-free grammar. |       |
|                                  |             | 16th         | Final exam                           |          |           |  |       |
| Evaluation Method and Weight (%) |             |              |                                      |          |           |  |       |
|                                  | Examination | Presentation | Mutual Evaluations between students  | Behavior | Portfolio | Other  | Total |
| Subtotal                         | 100         | 0            | 0                                    | 0        | 0         | 0  | 100   |
| Basic Proficiency                | 0           | 0            | 0                                    | 0        | 0         | 0  | 0     |
| Specialized Proficiency          | 100         | 0            | 0                                    | 0        | 0         | 0  | 100   |
| Cross Area Proficiency           | 0           | 0            | 0                                    | 0        | 0         | 0  | 0     |

|  |             |  |   |   |  |  |  |
|--|-------------|--|---|---|--|--|--|
| Akashi College   |             | Year   | 2023  |   | Course Title   | Discrete Mathematics B   |  |
| Course Information   |             |  |   |   |  |  |  |
| Course Code  |             | 5439   |   | Course Category   |  | Specialized / Elective   |  |
| Class Format   |             | Lecture  |   | Credits   |  | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade   |  | 4th  |  |
| Term   |             | Second Semester  |   | Classes per Week  |  | 2  |  |
| Textbook and/or Teaching Materials   |             |  |   |   |  |  |  |
| Instructor   |             | HAMADA Yukihiro  |   |   |  |  |  |
| Course Objectives  |             |  |   |   |  |  |  |
| [1] Can explain the generalized concept of being equal and being larger (smaller).<br>[2] Can explain the basics of graph theory.<br>[3] Can explain the basics of formal language theory. |             |  |   |   |  |  |  |
| Rubric   |             |  |   |   |  |  |  |
|  |             | Ideal Level  |   | Standard Level  |  | Unacceptable Level   |  |
| Achievement 1  |             | Can explain the equivalence relation, partial orders, and total orders accurately.   |   | Can explain the equivalence relation, partial orders, and total orders.           |  | Cannot explain the equivalence relation, partial orders, and total orders.           |  |
| Achievement 2  |             | Can explain the path, connectivity, and tree of graph theory accurately.   |   | Can explain the path, connectivity, and tree of graph theory.                     |  | Cannot explain the path, connectivity, and tree of graph theory.                     |  |
| Achievement 3  |             | Can use Backus form, context-free grammar, finite automaton, and regular grammar correctly.  |   | Can use Backus form, context-free grammar, finite automaton, and regular grammar. |  | Cannot use Backus form, context-free grammar, finite automaton, and regular grammar. |  |
| Assigned Department Objectives   |             |  |   |   |  |  |  |
| Teaching Method  |             |  |   |   |  |  |  |
| Outline  |             | Discrete mathematics is a field of mathematics that deals with finite or discrete subjects, and one of the foundations of computer science. In this course, you will learn about relations on a set, graphs and trees, finite automaton and regular grammar.                             |   |   |  |  |  |
| Style  |             | Classes will be held in a lecture style.   |   |   |  |  |  |
| Notice   |             | Make sure you understand the exact definition of the term and get an intuitive image from the formal description. Try to solve the examples or exercise problems yourself and score it against the answer. Students who miss 1/3 or more of classes will not be eligible for evaluation. |   |   |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |   |   |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input checked="" type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class                    |  | <input type="checkbox"/> Instructor Professionally Experienced                       |  |
|  |             |  |   |   |  |  |  |
| Course Plan  |             |  |   |   |  |  |  |
|  |             |  | Theme   |   | Goals  |  |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st  | Binary relation 1 of 2                                  |   | Can explain the basics of binary relation.   |  |  |
|  |             | 2nd  | Binary relation 2 of 2                                  |   | Can calculate composition and exponentiation of binary relation.   |  |  |
|  |             | 3rd  | Equivalence relation 1/2                                |   | Can explain the equivalence relation, which is a generalization of the concept of equal.   |  |  |
|  |             | 4th  | Equivalence relation 2/2                                |   | Can handle equivalence class, quotient set, and subdivisions of equivalence relation.  |  |  |
|  |             | 5th  | Order 1 of 2  |   | Can explain the partially ordered set and total order of the inequality (=) generalization.  |  |  |
|  |             | 6th  | Order 2 of 2  |   | Can handle the upper extremum, lower extremum, maximum, and minimum values of a partially ordered set, and can explain the above (below) boundary.                 |  |  |
|  |             | 7th  | Midterm exam<br>It is given during class.               |   |  |  |  |
|  |             | 8th  | Illustration of binary relation                         |   | Can illustrate the binary relation as a directed graph.  |  |  |
|  | 4th Quarter | 9th  | Hasse diagram, topological sort, and transitive closure |   | Can draw a Hasse diagram of partially ordered set, and can explain the closure of topological sort and transitive.   |  |  |
|  |             | 10th   | Graph basics 1 of 2                                     |   | Can explain the basics of graphs.  |  |  |
|  |             | 11th   | Graph basics 2 of 2                                     |   | Can explain n-partite graph and several kinds of paths in a graph. Also, can represent a graph by adjacency matrix, adjacency list and incidence matrix.           |  |  |
|  |             | 12th   | The connectivity of a graph                             |   | Can explain the diameter, radius, connected component, cut vertex, bridge, connectivity and edge connectivity. Also, can explain n-connected and n-edge connected. |  |  |
|  |             | 13th   | Tree  |   | Can explain the fundamental concepts and theorems about trees. Also, can explain ordered tree, positional tree, binary tree and n-ary tree.                        |  |  |

|  |  |      |  |  |
|--|--|------|--|--|
|  |  | 14th | Finite automaton and nondeterministic finite automaton | Can define FA and NFA formally and draw their state transition diagrams. Also, can determine the language that they accept.  |
|  |  | 15th | Regular grammar and regular expression                 | Can define right linear grammar and left linear grammar formally, and determine the language that they generate. Can represent a given language by regular expression. |
|  |  | 16th | Final exam   |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|   |   |                                       |   |  |   |
|---|---|---------------------------------------|---|--|---|
| Akashi College  |   | Year                                  | 2023  | Course Title   | English V   |
| Course Information  |   |                                       |   |  |   |
| Course Code   | 5501  |                                       | Course Category   | General / Compulsory   |   |
| Class Format  | Lecture   |                                       | Credits   | Academic Credit: 2   |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade   | 5th  |   |
| Term  | First Semester  |                                       | Classes per Week  | 2  |   |
| Textbook and/or Teaching Materials  | (1) 早川幸治・番場直之「GIGA BOOSTER FOR THE TOEIC L&R TEST」KINSEIDO. (2) 瓜生豊・篠田重晃「Next Stage 英文法・語法問題」桐原書店.  |                                       |   |  |   |
| Instructor  | HIRAKAWA Yuki   |                                       |   |  |   |
| Course Objectives   |   |                                       |   |  |   |
| 1) Learn new vocabulary in accordance with the curriculum guidelines for high school learned, and can use them properly.<br>2) Learn grammar in accordance with the curriculum guidelines for high school learned, and can use them properly.<br>3) Learn sentence structure in accordance with the curriculum guidelines for high school learned, and can use them properly.<br>4) Can read texts written in plain English, get the gist of them, and comprehend necessary information.<br>5) Learn the rules of English pronunciation and accents and can use them properly in order to speak clearly and convey one's meaning to a listener. |   |                                       |   |  |   |
| Rubric  |   |                                       |   |  |   |
|   | Ideal Level   |                                       | Standard Level  |  | Unacceptable Level  |
| Achievement 1   | Fully learned new vocabulary in accordance with the curriculum guidelines for high school, and can use them properly.   |                                       | Learned new vocabulary in accordance with the curriculum guidelines for high school, and can use them.                      |  | Have not learned new vocabulary in accordance with the curriculum guidelines for high school.                 |
| Achievement 2   | Fully learned grammar and sentence structure in accordance with the curriculum guidelines for high school, and can use them properly.   |                                       | Learned grammar and sentence structure in accordance with the curriculum guidelines for high school, and can use them.      |  | Have not learned grammar and sentence structure in accordance with the curriculum guidelines for high school. |
| Achievement 3   | Fully learned sentence structure in accordance with the curriculum guidelines for high school, and can use them properly.   |                                       | Learned sentence structure in accordance with the curriculum guidelines for high school learned, and can use them properly. |  | Have not learned sentence structure in accordance with the curriculum guidelines for high school.             |
|   | Can read texts written in plain English, fully get the gist of them, and comprehend necessary information.  |                                       | Can read texts written in plain English, get the gist of them, and comprehend necessary information.                        |  | Cannot read texts written in plain English and get the gist of them.  |
|   | Fully learned the rules of English pronunciation and accents, and can use them properly.  |                                       | Learned the rules of English pronunciation and accents, and can use them properly.  |  | Have not learned the rules of English pronunciation and accents.  |
| Assigned Department Objectives  |   |                                       |   |  |   |
| Teaching Method   |   |                                       |   |  |   |
| Outline   | (1) The course will help develop reading and writing skills in particular, in order to acquire the basic English skills necessary to be an engineer active in the times of internationalization.<br>(2) The aim is to improve practical English proficiency by using English texts compiled for science and engineering students. |                                       |   |  |   |
| Style   | To achieve these goals, students are required to do the following self-study:<br>・ Learn the new words in the English vocabulary book and their pronunciations, but also be able to write/say the example sentences used.<br>・ Review the English texts in classes and practice until you can recite them.                        |                                       |   |  |   |
| Notice  | (1) Take advantage of the quizzes as a good opportunity to build vocabulary and improve the ability to compose in English.<br>(2) If you fail to take a quiz due to unexcused tardiness or absence, you will be given a zero.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.                    |                                       |   |  |   |
| Characteristics of Class / Division in Learning   |   |                                       |   |  |   |
| <input type="checkbox"/> Active Learning  |   | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class           | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan   |   |                                       |   |  |   |
|   |   |                                       | Theme   | Goals  |   |
| 1st Semester  | 1st Quarter   | 1st                                   | Class guidance<br>Explain how classes will be conducted, vocabulary quizzes, grading system, etc.                           |  |   |
|   |   | 2nd                                   | Lesson 1.   | Learn English about numbers and calculations.                            |   |
|   |   | 3rd                                   | Lesson 2.   | Learn English about shapes.  |   |
|   |   | 4th                                   | Lesson 3.   | Learn English about shapes.  |   |
|   |   | 5th                                   | Lesson 4.   | Learn English about the states of matter.                                |   |
|   |   | 6th                                   | Lesson 5.   | Learn English about the states of matter.                                |   |
|   |   | 7th                                   | Lesson 6.   | Learn English about graphs and functions.                                |   |
|   |   | 8th                                   | Midterm exam<br>Take the midterm exam.  |  |   |
|   | 2nd Quarter   | 9th                                   | Returning and explanation of the midterm exam<br>Return and explain the midterm exam.                                       | Re-learn and understand the questions that they got wrong in particular. |   |

|  |  |      |            |  |
|--|--|------|------------|--|
|  |  | 10th | Lesson 7.  | Learn English about graphs and functions.        |
|  |  | 11th | Lesson 8.  | Learn English about the human body.              |
|  |  | 12th | Lesson 9.  | Learn English about the human body.              |
|  |  | 13th | Lesson 10. | Learn English about the human body.              |
|  |  | 14th | Lesson 11. | Learn English about electricity and electronics. |
|  |  | 15th | Lesson 12. | Learn English about electricity and electronics. |
|  |  | 16th | Final exam |  |

| Evaluation Method and Weight (%) |             |             |       |       |
|----------------------------------|-------------|-------------|-------|-------|
|                                  | Examination | Little test | Other | Total |
| Subtotal                         | 70          | 30          | 0     | 100   |
| Basic Proficiency                | 70          | 30          | 0     | 100   |
| Specialized Proficiency          | 0           | 0           | 0     | 0     |
| Cross Area Proficiency           | 0           | 0           | 0     | 0     |

|  |             |  |   |  |                    |  |
|--|-------------|--|---|--|--------------------|--|
| Akashi College   |             | Year   | 2023  |  | Course Title       | Introduction to Japanese Language and Communication            |
| Course Information   |             |  |   |  |                    |  |
| Course Code  |             | 5502   |   | Course Category  | General / Elective |  |
| Class Format   |             | Lecture  |   | Credits  | Academic Credit: 2 |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  | 5th                |  |
| Term   |             | First Semester   |   | Classes per Week   | 2                  |  |
| Textbook and/or Teaching Materials   |             | 河野哲也『レポート・論文の書き方入門 第4版』（慶應義塾大学出版会）、適宜プリントを配布する。  |   |  |                    |  |
| Instructor   |             | TANGE Atsuko   |   |  |                    |  |
| Course Objectives  |             |  |   |  |                    |  |
| (1) 実用的な文章（手紙・メール）を、相手や目的に応じた体裁や語句を用いて作成できる。<br>(2) 報告・論文の目的に応じて、印刷物、インターネットから適切な情報を収集できる。<br>(3) 報告・論文を、整理した情報を基にして、主張が効果的に伝わるように論理の構成や展開を工夫し、作成することができる。 |             |  |   |  |                    |  |
| Rubric   |             |  |   |  |                    |  |
|  |             | 理想的な到達レベルの目安   |   | 標準的な到達レベルの目安   |                    | 未到達レベルの目安  |
| 評価項目1  |             | 問い合わせ・依頼の手紙・メールを効果的に作成できる。   |   | 文書・メールの、項目・構成・レイアウトを適切に示すことができる。                               |                    | 手紙・メールのレイアウトに難がある。   |
| 評価項目2  |             | PR文書・レジメ・論文の材料選択が適切である。  |   | PR文書・レジメ・論文に材料を示すことができる。                                       |                    | PR文書・レジメ・論文の材料に不足がある。  |
| 評価項目3  |             | 提案書・報告書・論文の構成・展開が適切・効果的である。  |   | 提案書・報告書・論文に構成・展開が見られる。   |                    | 提案書・報告書・論文の構成・展開に難がある。   |
| Assigned Department Objectives   |             |  |   |  |                    |  |
| Teaching Method  |             |  |   |  |                    |  |
| Outline  |             | エントリーシート・履歴書・レポート・論文など、目的の異なる様々な文章(文書) 表現について、それぞれの特徴や注意点等を概説する。各自、材料を事前に準備し、制限時間内で適切に書く練習を行い、明らかになった問題点を克服し、豊かで正しい表現力を獲得することを目的とする。 |   |  |                    |  |
| Style  |             | 履歴書・PR文書・提案書・報告書・論文の基本的な作成方法・例示の講義と、その習熟・理解度を確認する設問に対する解答を授業内・授業外に作成・提出させ、評価する。  |   |  |                    |  |
| Notice   |             | 本科目は、授業で保証する学習時間と、予習・復習及び課題レポート作成に必要な標準的な自己学習時間の総計が、90時間に相当する学習内容である。<br>評価の対象としない欠席条件(割合) 1/3以上の欠課                                  |   |  |                    |  |
| Characteristics of Class / Division in Learning  |             |  |   |  |                    |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input checked="" type="checkbox"/> Applicable to Remote Class |                    | <input type="checkbox"/> Instructor Professionally Experienced |
|  |             |  |   |  |                    |  |
| Course Plan  |             |  |   |  |                    |  |
|  |             |  | Theme   | Goals  |                    |  |
| 1st Semester   | 1st Quarter | 1st  | オリエンテーション<br>1 授業の概要<br>2 テーマ・意図・構成・推敲について                              | 文書作成に際して、箇条書き・符号・見出し・数値を用いて、適切にレイアウトできる。                       |                    |  |
|  |             | 2nd  | 履歴書・エントリーシート<br>1 データ部の書き方・自己PR部の書き方・材料収集・効果的表現（記号・構成など）<br>2 テーマ・事例の検討 | 各人の進路希望に沿った履歴書・エントリーシートを効果的に作成できる。                             |                    |  |
|  |             | 3rd  | 志望理由書・研究計画書<br>1 志望理由書について<br>2 研究計画書について                               | 各人の希望進路に応じた志望理由と研究（キャリア）計画を適切な形式で効果的に作成できる。                    |                    |  |
|  |             | 4th  | 手紙・メール<br>1 手紙の書き方について<br>2 メールの書き方について                                 | 状況に応じた手紙・メールを作成することができる。                                       |                    |  |
|  |             | 5th  | 小論文 1<br>1 テーマ：社会問題・時事問題<br>2 材料収集・構成                                   | 各テーマに応じ、適切な材料を用いて、論理的・効果的に小論文を作成することができる。                      |                    |  |
|  |             | 6th  | 小論文 2<br>1 テーマ：環境・科学技術<br>2 材料収集・構成                                     | 各テーマに応じ、適切な材料を用いて、論理的・効果的に小論文を作成することができる。                      |                    |  |
|  |             | 7th  | 報告書・レポート 1<br>1 別記書き<br>2 図表・レイアウト                                      | 別記書きの形式で図表を効果的に使い、レイアウトに優れた報告書・レジメを作成することができる。                 |                    |  |
|  |             | 8th  | 報告書・レポート 2<br>1 企画書・提案書<br>2 プレゼンテーション                                  | 企画書・提案書のレジメ・スライドを作成できる。効果的にプレゼンテーションできる。                       |                    |  |
|  | 2nd Quarter | 9th  | テーマ別問題点の整理<br>1 内容面の問題点<br>2 表現面の問題点                                    | テーマ設定・材料選択・表現技術に優れた各種文書の作成ができる。                                |                    |  |
|  |             | 10th   | アカデミックスキル<br>考え方・基礎的技術の整理   | アカデミックスキルを理解し、自身の文章に反映することができる。                                |                    |  |
|  |             | 11th   | 研究テーマと問題設定<br>1 テーマ・問題の設定<br>2 自己分析                                     | テーマを適切に設定し、有効な材料を用いて、文書を構成・展開できる。                              |                    |  |



|  |  |      |                                       |  |
|--|--|------|---------------------------------------|--|
|  |  | 12th | 論文 1<br>1 計画書<br>2 構成                 | 説得力のある計画書を作成できる。論文全体の構成表を作成できる。                          |
|  |  | 13th | 論文 2<br>1 表記上の注意<br>2 文献表             | 注記・引用・文献表を適切に書くことができる。                                   |
|  |  | 14th | 論文 3<br>1 調査・研究・意義<br>2 中間報告・審査会・質疑応答 | 研究方法を明瞭に示し、研究成果の見通しを示すことができる。中間発表・卒業研究発表までの明確な計画表を作成できる。 |
|  |  | 15th | 課題と整理<br>1 問題点の課題と整理<br>2 まとめ         | 自身の研究計画を見直し、適切に改善できる。                                    |
|  |  | 16th | 期末試験                                  |  |

#### Evaluation Method and Weight (%)

|          | 試験 | 課題 | その他 | Total |
|----------|----|----|-----|-------|
| Subtotal | 60 | 40 | 0   | 100   |
| 基礎的能力    | 60 | 40 | 0   | 100   |
| 専門的能力    | 0  | 0  | 0   | 0     |
| 分野横断的能力  | 0  | 0  | 0   | 0     |

|   |   |  |  |   |   |  |
|---|---|--|--|---|---|--|
| Akashi College  |   | Year   | 2023   |   | Course Title  | Law  |
| Course Information  |   |  |  |   |   |  |
| Course Code   | 5503  |  |  | Course Category   | General / Elective  |  |
| Class Format  | Lecture   |  |  | Credits   | Academic Credit: 2  |  |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |  |  | Student Grade   | 5th   |  |
| Term  | First Semester  |  |  | Classes per Week  | 2   |  |
| Textbook and/or Teaching Materials  | Do not use.   |  |  |   |   |  |
| Instructor  | KUROKUI Yoshimi   |  |  |   |   |  |
| Course Objectives   |   |  |  |   |   |  |
| Understand basic legal concepts and legal thinking. Objectively understand what role the law is expected to play and what role it has played in addressing the challenges and problems that change with the times.<br>The course also aims to provide students with an opportunity to understand that law is closely related to our daily lives, to develop an awareness of issues and opinions, and to acquire the ability to think legally. |   |  |  |   |   |  |
| Rubric  |   |  |  |   |   |  |
|   | Ideal Level   |  | Standard Level   |   | Unacceptable Level  |  |
| Achievement 1   | Thoroughly understand basic knowledge of law (the Constitution, the Penal Code, and the Civil Code, and International Law).   |  | Have basic knowledge of law (the Constitution, the Penal Code, and the Civil Code, and International Law).       |   | Do not have sufficient basic knowledge of law (the Constitution, the Penal Code, and the Civil Code, and International Law).      |  |
| Achievement 2   | Be able to objectively explain what role the law is expected to play and has played in addressing challenges and problems.  |  | Understand what role the law is expected to play and has played in addressing challenges and problems.           |   | Do not have sufficient understandings what role the law is expected to play and has played in addressing challenges and problems. |  |
| Achievement 3   | Can accurately and legally examine various incidents and events occurring in modern society.  |  | Can think legally to a certain extent when considering various incidents and events occurring in modern society. |   | Cannot think from a legal perspective when considering the various incidents and events occurring in modern society.              |  |
| Assigned Department Objectives  |   |  |  |   |   |  |
| Teaching Method   |   |  |  |   |   |  |
| Outline   | The purpose of this course is to learn the basic concepts of law and legal thinking. Students will confirm the role and function of law in politics, economy, and society, in connection with various events in daily life.   |  |  |   |   |  |
| Style   | The course is centered on lectures using handouts and blackboard but the students are encouraged to speak actively in order to make the classes more interactive.   |  |  |   |   |  |
| Notice  | The total learning content of this course is equivalent to 90 hours, which is the sum of the learning time guaranteed in class and the standard self-study time required for preparation, review, and assignment report writing.<br>The basic concepts of law are systematically explained in this course, but the themes of each class and the order in which they are presented may be changed depending on the students' understanding.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |  |  |   |   |  |
| Characteristics of Class / Division in Learning   |   |  |  |   |   |  |
| <input checked="" type="checkbox"/> Active Learning   |   | <input checked="" type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class  |   | <input type="checkbox"/> Instructor Professionally Experienced |
|   |   |  |  |   |   |  |
| Course Plan   |   |  |  |   |   |  |
|   |   |  | Theme  | Goals   |   |  |
| 1st Semester  | 1st Quarter   | 1st  | Guidance: What is law?   | Learn about the concepts and classifications of laws.   |   |  |
|   |   | 2nd  | History of law   | Learn about the historic evolution of law.  |   |  |
|   |   | 3rd  | Basic Principles of the Constitution   | Understand the basic principles (popular sovereignty, respect for basic human rights, pacifism) as the fundamental principles of the Constitution at the top of all Japanese laws.    |   |  |
|   |   | 4th  | Equal rights   | Understand the basic concepts of equal rights.  |   |  |
|   |   | 5th  | Civil liberties  | Understand the basic concepts of civil liberties.   |   |  |
|   |   | 6th  | Social rights  | Understand the basic concepts of social rights.   |   |  |
|   |   | 7th  | National governance organization   | Understand Japan's governing institutions (Diet, Cabinet, and courts) and the relationship between them.  |   |  |
|   |   | 8th  | Review of 1stQ   | Review of 1stQ  |   |  |
|   | 2nd Quarter   | 9th  | Penal Code   | Learn about the function of the Penal Code and necessary conditions for a crime. Understand how an act is legally formed as a criminal offense.                                       |   |  |
|   |   | 10th   | Civil Code   | Learn the basic principles of property law and family law. Understand that my human promise in daily life can constitute a civil code agreement.                                      |   |  |
|   |   | 11th   | Economy / Industry and Law   | Learn consumer protection law, intellectual property law, etc.. Understand how the law guarantees relationships between various actors engaged in economic and industrial activities. |   |  |

|  |  |      |  |   |
|--|--|------|--|---|
|  |  | 12th | Labor and law                            | Understand how workers' rights are guaranteed by law.   |
|  |  | 13th | Social security / Social welfare and law | Understand how the law guarantees people's lives (medical care, pensions, welfare, etc.).   |
|  |  | 14th | Information society and law              | Understand how the law guarantees the individual's freedom to obtain information and regulates the abuse of misinformation and inappropriate information. |
|  |  | 15th | International society and law            | Learn the basics of international law governing relations between states.   |
|  |  | 16th | Final exam                               | Take the final exam (written test).   |

#### Evaluation Method and Weight (%)

|                         | Examination | Assignment | Mutual Evaluations between students | Quiz | Portfolio | Other | Total |
|-------------------------|-------------|------------|-------------------------------------|------|-----------|-------|-------|
| Subtotal                | 60          | 20         | 0                                   | 20   | 0         | 0     | 100   |
| Basic Proficiency       | 60          | 20         | 0                                   | 20   | 0         | 0     | 100   |
| Specialized Proficiency | 0           | 0          | 0                                   | 0    | 0         | 0     | 0     |
| Cross Area Proficiency  | 0           | 0          | 0                                   | 0    | 0         | 0     | 0     |

|   |  |   |                  |   |            |
|---|--|---|------------------|---|------------|
| Akashi College  |  | Year  | 2023             | Course Title  | Philosophy |
| Course Information  |  |   |                  |   |            |
| Course Code   | 5504   |   | Course Category  | General / Elective  |            |
| Class Format  | Lecture  |   | Credits          | Academic Credit: 2  |            |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade    | 5th   |            |
| Term  | First Semester   |   | Classes per Week | 2   |            |
| Textbook and/or Teaching Materials  | Hitoshi Akiyama et al., Cross-Cultural Understanding for Success in a Global Society, Jikkyo Shuppan Co.   |   |                  |   |            |
| Instructor  | ARAKAWA Hironori   |   |                  |   |            |
| Course Objectives   |  |   |                  |   |            |
| (1) Understand what ethics one should have as an engineer active in the world.<br>(2) Understand the current fluid international situation.<br>(3) Understand and explain the concept of national and international economies.<br>(4) Understand the needs of consumers and the role of engineers in different cultures.<br>(5) Understand what ethical issues engineers may face.<br>(6) Acquire knowledge of intellectual property rights and understand their significance in manufacturing.<br>(7) Understand how engineers should be positioned in modern society and what they should do. |  |   |                  |   |            |
| Rubric  |  |   |                  |   |            |
|   | Ideal Level  | Standard Level  |                  | Unacceptable Level  |            |
| Achievement 1   | Have a good understanding of what ethics one should have as an engineer working in the world.  | Understand what ethics one should have as a world-class engineer.                                     |                  | Do not fully understand what ethics they should have as engineers who are active in the world.                  |            |
| Achievement 2   | Fully aware of the current international situation that is in flux.  | Understands the current international situation in flux.  |                  | Do not understand the current international situation in flux.  |            |
| Achievement 3   | Have sufficient knowledge of national and international economic concepts.   | Have knowledge of national and international economic concepts.                                       |                  | Do not have knowledge of national and international economic concepts.  |            |
| Achievement 4   | Have sufficient knowledge of the needs of consumers and the role of engineers in different cultures.   | Have knowledge of the needs of consumers and the role of engineers in different cultures.             |                  | Do not have knowledge of the needs of consumers and the role of engineers in different cultures.                |            |
| Achievement 5   | Have a good understanding of what ethical issues engineers may face.   | Have a understanding of what ethical issues engineers may face.                                       |                  | Do not have a good understanding of what ethical issues engineers may face.                                     |            |
| Achievement 6   | Acquire knowledge of intellectual property rights and fully understand their significance in manufacturing.  | Acquire knowledge of intellectual property rights and understand their significance in manufacturing. |                  | Do not have knowledge of intellectual property rights and fully understand their significance in manufacturing. |            |
| Achievement 7   | Have a good understanding of how they should be positioned in today's society and what they should do.   | Understand how engineers should be positioned in today's society and what they should do.             |                  | Do not understand how engineers should be positioned in today's society and what they should do.                |            |
| Assigned Department Objectives  |  |   |                  |   |            |
| Teaching Method   |  |   |                  |   |            |
| Outline   | In today's globalized society, engineers have a responsibility to society to properly apply science and technology based on their expertise. In this lecture, students will be introduced to the ethical and philosophical issues surrounding engineers in global society, and after understanding the basic concepts of social science and international sociology, students who are expected to be active globally as engineers in the future will select a topic related to international society and engineer ethics, and will independently research, present, and discuss the topic. The class focuses on research, presentation, and discussion on topics related to international society and ethics for engineers. The ultimate goal of this course is to help students acquire the knowledge of ethics and global issues necessary for engineers and researchers, and to actively cultivate the ability to approach various issues and society based on their own future perspectives. |   |                  |   |            |
| Style   | The course will be read in a round-reading format using the textbooks. The participants will be divided into teams and each team will give a presentation on each topic. Other participants will discuss with the presenters. At the end of each class, students are required to submit a written summary of the class content and their opinions, which will be evaluated as a short report. In the end, each student will choose a theme based on the textbook/reference book he/she has chosen and conduct in-depth research, including fieldwork and surveys if possible. Based on the results of this research, students will be required to write a final thesis. In the presentation, students will be evaluated on their own research as well as their interpretation of the textbooks and class discourse, and therefore, preparation for reading each book is essential.   |   |                  |   |            |
| Notice  | The content of this course is a subject that changes from moment to moment according to social conditions. Students are expected to approach class with a daily interest in current events. Each presenter is required to prepare a resume for his/her topic, and the audience will be graded on the questions they ask about the presentation. Therefore, please be sure to read the relevant sections of the textbook for each presentation. Proactive participation is required.<br>Absence conditions not subject to evaluation (percentage) 1/3 or more of the class  |   |                  |   |            |
| Characteristics of Class / Division in Learning   |  |   |                  |   |            |
| <input checked="" type="checkbox"/> Active Learning   |  | <input checked="" type="checkbox"/> Aided by ICT  |                  | <input checked="" type="checkbox"/> Applicable to Remote Class  |            |
|   |  |   |                  | <input type="checkbox"/> Instructor Professionally Experienced  |            |
| Course Plan   |  |   |                  |   |            |
|   |  |   | Theme            | Goals   |            |

|              |             |      |   |   |
|--------------|-------------|------|---|---|
| 1st Semester | 1st Quarter | 1st  | Why engineering ethics?<br>Why is it necessary for those who aspire to be engineers to learn ethics? Clarify the links between engineers and ethics through today's social background, the codes of ethics established by the engineering academic societies, etc., and learn and confirm their significance. | Understand the links between engineers and ethics based on today's social background and the code of ethics.                                    |
|              |             | 2nd  | The space shuttle Challenger accident 1<br>Deal with the space shuttle Challenger accident, the most famous case in engineering ethics, and discuss the decisions made by the engineers and executives in the organization.   | Understand the characteristics and relationships of the decisions made by the engineers and executives.   |
|              |             | 3rd  | The space shuttle Challenger disaster 2<br>Following the previous class, use the case of the Challenger accident as a guide and consider what responsibilities engineers have for making organization risk management function effectively.   | Understand the responsibilities and abilities required of engineers for organization risk management.   |
|              |             | 4th  | The Tokaimura JCO criticality accident 1<br>Use the JCO criticality accident as an example to consider the significance of improvement activities that have supported the Japanese manufacturing industry, the challenges facing them, and how engineers should engage with them.                             | Understand the significance and challenges of improvement activities.   |
|              |             | 5th  | The Tokaimura JCO criticality accident 2<br>Following the previous class, use the JCO criticality accident to discuss group thinking, which collective organizations are prone to, and how technicians should deal with it to ensure safety and quality.  | Learn the characteristics of group thinking and the abilities needed to deal with it and secure safety.   |
|              |             | 6th  | Whistleblowing 1<br>Discuss the purpose of the recently introduced whistleblower protection system, criticisms of the current laws, and the relationship between this system and engineers.   | Acquire knowledge of the whistleblower protection system, and understand its issues.  |
|              |             | 7th  | Whistleblowing 2<br>Following the previous class, deal with whistleblowing. An increasing number of companies have established help desks, etc. as part of their efforts to enhance their compliance systems. Examine this trend's significance in the relationship between organizations and individuals.    | Understand what needs to be kept in mind to ensure proper organizational behavior.  |
|              |             | 8th  | Product Liability Act<br>Review the details of the Product Liability Act—which is said to be the most relevant law for engineers—and discuss that it is important for engineers to establish it as a manufacturing belief.  | Gain appropriate knowledge of the Product Liability Act and become able to use it as a manufacturing belief.                                    |
|              | 2nd Quarter | 9th  | Intellectual properties<br>Confirm the significance of the patent, copyright, and other systems for technology development, and examine the issues, etc., facing them that accompany information technology development, etc.   | Acquire knowledge of intellectual property rights and understand their significance in manufacturing.   |
|              |             | 10th | The Bhopal disaster 1<br>Use the agricultural chemicals factory accident in Bhopal, India—the biggest industrial accident in history—as an example to discuss the further increasing problems associated with overseas industrial activities as globalization progresses.                                     | Acquire knowledge of the issues faced in overseas industrial activities.  |
|              |             | 11th | The Bhopal disaster 2<br>Based on the previous class, examine the fact that there is a need for engineers to take into account that technology development is deeply related to the interaction between social conditions, culture, history, and thoughts, etc., that surround it.                            | Deepen understanding of the previous class and learn effective methods for overseas industrial activities.                                      |
|              |             | 12th | The Roppongi Hills revolving door accident 1<br>Introduces the activities of the Door Project, which took place after the revolving door accident, and discuss the ideas and significance of failure studies and topics such as Heinrich's law in risk management.  | Acquire knowledge of failure studies and Heinrich's law.  |
|              |             | 13th | The Roppongi Hills revolving door accident 2<br>Based on the previous class, discuss how engineers also have their own culture as engineers, and that it is important to pass down knowledge to overcome the problems that result from this.  | Understand that in order to understand and use technology effectively, it is necessary to properly understand and communicate technology ideas. |
|              |             | 14th | Universal design<br>Confirm that there is a political aspect to new technology development that gives birth to new power struggles and discrimination, whereas universal design is an attempt to democratize it.  | Understand the concept of universal design and the systems necessary for achieving it.  |

|  |  |      |  |  |
|--|--|------|--|--|
|  |  | 15th | The scope of engineering ethics<br>New technology developments by engineers have had a variety of impacts in sectors such as information society and medical care.<br>Consider the sort of relation that engineers should have to ethics in these other areas. | Understand the relationship between engineers and modern society and what their place in it should be. |
|  |  | 16th | final exam   |  |

| Evaluation Method and Weight (%) |            |                         |                                   |              |       |
|----------------------------------|------------|-------------------------|-----------------------------------|--------------|-------|
|                                  | Final Exam | Presentation in lecture | Comments and questions in lecture | Final Report | Total |
| Subtotal                         | 40         | 15                      | 10                                | 35           | 100   |
| Basic Proficiency                | 40         | 15                      | 0                                 | 0            | 55    |
| Specialized Proficiency          | 0          | 0                       | 0                                 | 0            | 0     |
| Cross Area Proficiency           | 0          | 0                       | 10                                | 35           | 45    |

|   |  |                                       |  |  |   |
|---|--|---------------------------------------|--|--|---|
| Akashi College  |  | Year                                  | 2023   | Course Title   | Biophysical Chemistry   |
| Course Information  |  |                                       |  |  |   |
| Course Code   | 5505   |                                       | Course Category  | General / Elective   |   |
| Class Format  | Lecture  |                                       | Credits  | School Credit: 1   |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade  | 5th  |   |
| Term  | Second Semester  |                                       | Classes per Week   | 2  |   |
| Textbook and/or Teaching Materials  |  |                                       |  |  |   |
| Instructor  | OGASAWARA Hiromichi  |                                       |  |  |   |
| Course Objectives   |  |                                       |  |  |   |
| (1) Learn how to examine chemical reactions occurring in life based on knowledge of physics and chemistry.<br>(2) Learn how basic scientific knowledge of mathematics, physics, and chemistry is applied to understanding life, including the foundations of knowledge for considering in future that engineering technique affect the living body and environment. |  |                                       |  |  |   |
| Rubric  |  |                                       |  |  |   |
|   | Ideal Level  |                                       | Standard Level   |  | Unacceptable Level  |
| Achievement 1   | Fully understand how to examine chemical reactions occurring in life based on physics and chemistry.   |                                       | Understand how to examine chemical reactions occurring in life based on physics and chemistry. |  | Do not understand how to examine chemical reactions occurring in life based on physics and chemistry. |
| Achievement 2   | Fully understand how basic knowledge is applied as life science.   |                                       | Understand how basic knowledge is applied as life science.                                     |  | Do not understand how basic knowledge is applied as life science.                                     |
| Assigned Department Objectives  |  |                                       |  |  |   |
| Teaching Method   |  |                                       |  |  |   |
| Outline   | Physical chemistry is a field of chemistry in which the structure, function (physical properties), and reaction of matters are elucidated using physical methods. In this field, biophysical chemistry is the division that deals with the phenomena occurring in life. In this course, we will study the chemical reactions that occur in life, with focus mainly on the energy flow and reaction rate. |                                       |  |  |   |
| Style   | Regular classes will be taught in a lecture style, and there will also be exercises and quizzes.   |                                       |  |  |   |
| Notice  | Study by consciously thinking how knowledge of the basic scientific subjects (mathematics, physics, chemistry) that you have learned so far is helping to understand life and familiar phenomena related to it.<br>The schedule of the midterm exam may be changed.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.   |                                       |  |  |   |
| Characteristics of Class / Division in Learning   |  |                                       |  |  |   |
| <input type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class                               | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan   |  |                                       |  |  |   |
|   |  |                                       | Theme  | Goals  |   |
| 2nd Semester  | 3rd Quarter  | 1st                                   | Guidance   | Learn about the binding energy.  |   |
|   |  | 2nd                                   | Energetics of non-living and living materials  | Learn about the changes of matter and energy.  |   |
|   |  | 3rd                                   | No class because of a tour trip.   |  |   |
|   |  | 4th                                   | Energetics of non-living and living materials  | Learn about the exchange of energy with matter in living bodies.                             |   |
|   |  | 5th                                   | Catabolism   | Learn about the process of extracting energy from matter.                                    |   |
|   |  | 6th                                   | Photosynthesis   | Learn about the process by which plants use the energy of light to synthesize carbohydrates. |   |
|   |  | 7th                                   | Photosynthesis   | Learn about photochemical reactions.   |   |
|   |  | 8th                                   | Photosynthesis   | Learn about the basic matters of electronic structure of molecules.                          |   |
|   | 4th Quarter  | 9th                                   | Midterm exam   |  |   |
|   |  | 10th                                  | Chemical kinetics  | Learn about the basic matters of chemical kinetics that's necessary for future learning.     |   |
|   |  | 11th                                  | Enzymes  | Learn about the basic matters of enzymes.  |   |
|   |  | 12th                                  | Enzymes  | Learn about the basic matters of proteins.   |   |
|   |  | 13th                                  | Michaelis-Menten enzyme kinetics (overview)  | Learn about the basic matters of Michaelis-Menten kinetics.                                  |   |
|   |  | 14th                                  | Michaelis-Menten enzyme kinetics (details)   | Learn about the inhibition of enzymes in Michaelis-Menten kinetics.                          |   |
|   |  | 15th                                  | Michaelis-Menten enzyme kinetics (details)   | Learn about the inhibition of enzymes by acids and bases.                                    |   |
|   |  | 16th                                  | Final exam   |  |   |
| Evaluation Method and Weight (%)  |  |                                       |  |  |   |
|   | Examinations   | Exercises / Quizzes                   | Attendance / Behavior  | Total  |   |
| Subtotal  | 40   | 30                                    | 30   | 100  |   |
| Basic Proficiency   | 40   | 30                                    | 30   | 100  |   |
| Specialized Proficiency   | 0  | 0                                     | 0  | 0  |   |

|                        |   |   |   |   |
|------------------------|---|---|---|---|
| Cross Area Proficiency | 0 | 0 | 0 | 0 |
|------------------------|---|---|---|---|



|  |   |                                       |  |   |   |
|--|---|---------------------------------------|--|---|---|
| Akashi College   |   | Year                                  | 2023   | Course Title  | Scientific Technology and the Environment   |
| Course Information   |   |                                       |  |   |   |
| Course Code  | 5506  |                                       | Course Category  | General / Elective  |   |
| Class Format   | Lecture   |                                       | Credits  | School Credit: 1  |   |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 5th   |   |
| Term   | Second Semester   |                                       | Classes per Week   | 2   |   |
| Textbook and/or Teaching Materials   | Hand out materials accordingly without using a textbook   |                                       |  |   |   |
| Instructor   | IMAI Ryoichi  |                                       |  |   |   |
| Course Objectives  |   |                                       |  |   |   |
| (1) Learn the history of the technological development from ancient to modern.<br>(2) Learn how the environmental destruction has occurred due to the technological development.<br>(3) Learn the relationship between technology and environmental destruction and think about how technologists should work.<br>(4) Be interested in other fields as well as engineering and can express opinions. |   |                                       |  |   |   |
| Rubric   |   |                                       |  |   |   |
|  | Ideal Level   |                                       | Standard Level   |   | Unacceptable Level  |
| Achievement 1  | Fully understand the history of the technological development from ancient to modern.   |                                       | Understand the history of the technological development from ancient to modern.  |   | Do not understand the history of the technological development from ancient to modern.                                      |
| Achievement 2  | Fully understand how the environmental destruction has occurred due to the technological development.   |                                       | Understand how the environmental destruction has occurred due to the technological development.                          |   | Do not understand how the environmental destruction has occurred due to the technological development.                      |
| Achievement 3  | Can accurately think about how technologist should work based on the relationship between technology and environmental destruction.   |                                       | Can think about how technologist should work based on the relationship between technology and environmental destruction. |   | Cannot think about how technologist should work based on the relationship between technology and environmental destruction. |
| Achievement 4  | Be interested in other fields as well as engineering and can accurately express opinions.   |                                       | Be interested in other fields as well as engineering and can express opinions.   |   | Neither be interested in other fields as well as engineering nor can express opinions.                                      |
| Assigned Department Objectives   |   |                                       |  |   |   |
| Teaching Method  |   |                                       |  |   |   |
| Outline  | Food is essential for us to live, and it is the basis to produce our body, mind and intelligence. Now problems of environment, agriculture and food are often brought up as threatening our health and life. This is because the incidents that life is made light of often occur, including the accident of Fukushima No. 1 nuclear power plant by the Great East Japan Earthquake in 2011. Then in this lecture, students understand relationship between technology or science and environment from the viewpoint of history from ancient to modern, centered on agriculture, agricultural technology and agricultural science that produce food as well as engineering. In addition, we will touch on the engineering ethics. |                                       |  |   |   |
| Style  | Classes will be held in a lecture style.<br>Liaison: Ogasawara  |                                       |  |   |   |
| Notice   | Evaluations are given with a focus on presentation and attitude during class and submitting reports.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.   |                                       |  |   |   |
| Characteristics of Class / Division in Learning  |   |                                       |  |   |   |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class  | <input type="checkbox"/> Instructor Professionally Experienced  |
|  |   |                                       |  |   |   |
| Course Plan  |   |                                       |  |   |   |
|  |   |                                       | Theme  | Goals   |   |
| 2nd Semester   | 3rd Quarter   | 1st                                   | Introduction – What is farming ? –   | Understand the significance and the method of this lecture and learn 'what is farming ?'  |   |
|  |   | 2nd                                   | Ancient civilization and agriculture   | Learn the relationship of the rise and fall of ancient civilizations and agriculture.   |   |
|  |   | 3rd                                   | Rice-paddy cultivation in the Edo period in Japan  | The Edo period is often said to have been the sustainable society. Especially cities in Japan are said to have been the cleanest in the world in those days. Then learn rice-paddy cultivation that was one of the secrets.                   |   |
|  |   | 4th                                   | The agricultural revolution in Europe –from three-field system to rotation system –                                      | Learn the Agricultural revolution in Europe that was one of the preconditions of the Industrial Revolution.   |   |
|  |   | 5th                                   | The Industrial Revolution in England and the establishment of the capitalistic economy                                   | Understand the Industrial Revolution and the capitalistic economy. Learn other arguments that the economic growth rate of the U.K. was too low to be called 'Revolution'.   |   |
|  |   | 6th                                   | The Meiji restoration and the establishment of the capitalistic economy in Japan   | During the Meiji period, the western agricultural technologies were introduced into Japan. But they did not adapt to the climate and natural features of Japan. Then learn the development of agricultural technology in Japan in those days. |   |

|  |             |      |   |   |
|--|-------------|------|---|---|
|  |             | 7th  | Japanese agriculture from the Meiji period to the prewar age of the Showa period and various problems                       | Learn various agricultural problems from the Meiji period to the prewar age of the Showa period (disputes that occurred between landowners and tenant farmers) and the achievements of people that developed various agricultural technologies (seed selection with salt solution, the birth of Koshihikari and so on). |
|  |             | 8th  | Midterm exam  |   |
|  | 4th Quarter | 9th  | The entire war system and Japanese agriculture – the diversion for armaments of not only iron but also many farm products – | Understand many farm products were diverted for armaments under the entire war system (konjac and Washi used to make balloon bombs and so on).  |
|  |             | 10th | The entire war system and overseas territories possessed by Japan – farming in 'Manchuria' –                                | Learn realities of farming by Japanese immigrants that went to 'Manchuria' in order to realize the ideal farming and escape poverty in Japan.   |
|  |             | 11th | War and agricultural science – general mobilization of not only engineering but also various studies –                      | Learn general mobilization of not only engineering but also various studies and technical experts under the entire war system.  |
|  |             | 12th | The development of the Japanese agriculture after World War II  | Learn the changes of Japanese agriculture and dietary environment under the rapid economic growth after World War II.   |
|  |             | 13th | Current agriculture in Japan – agriculture, food and environment in the future –  | Learn various problems that Japanese agriculture and food have today (depopulation, satiation, the detachment of food and agriculture, global warming, and so on).  |
|  |             | 14th | Agriculture, food and nuclear power plant   | Learn the reason why the nuclear power plant construction contributes to the depopulation of the regions. Think over whether 'the restoration of the Tohoku region' and 'nuclear power plant operation' go together.  |
|  |             | 15th | The global warming and the role of nuclear power plant  | Nuclear power plant is expected as an important clue to prevent global warming, but does it have the ability really? Think over that with various data, aim to have our own opinions.   |
|  |             | 16th | Final exam  |   |

#### Evaluation Method and Weight (%)

|                         | Behavior | Report | Examination | Total |
|-------------------------|----------|--------|-------------|-------|
| Subtotal                | 15       | 45     | 40          | 100   |
| Basic Proficiency       | 15       | 45     | 40          | 100   |
| Specialized Proficiency | 0        | 0      | 0           | 0     |
| Cross Area Proficiency  | 0        | 0      | 0           | 0     |

|  |             |  |  |   |  |   |  |
|--|-------------|--|--|---|--|---|--|
| Akashi College   |             | Year   | 2023   |   | Course Title   | Sports Science I  |  |
| Course Information   |             |  |  |   |  |   |  |
| Course Code  |             | 5507   |  | Course Category   |  | General / Elective  |  |
| Class Format   |             | Skill  |  | Credits   |  | School Credit: 1  |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade   |  | 5th   |  |
| Term   |             | First Semester   |  | Classes per Week  |  | 2   |  |
| Textbook and/or Teaching Materials   |             |  |  |   |  |   |  |
| Instructor   |             | GOTOH Takayuki,KOBAYASHI Yuki  |  |   |  |   |  |
| Course Objectives  |             |  |  |   |  |   |  |
| <ul style="list-style-type: none"><li>Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.</li><li>Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.</li></ul> |             |  |  |   |  |   |  |
| Rubric   |             |  |  |   |  |   |  |
|  |             | Ideal Level  |  | Standard Level  |  | Unacceptable Level  |  |
| Achievement 1  |             | Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.   |  | Participate in classes to improve their health and physical strength. Have some level of self-discipline. |  | Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline. |  |
| Achievement 2  |             | Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.  |  | Can participate in various sport practices and games.   |  | Do not participate in various sport practices and games.  |  |
| Achievement 3  |             | Understand and can play or take on the role of a leader.   |  | Understand the role of a leader, but cannot play that role.   |  | Do not understand the role of a leader. Also, never play that role.   |  |
| Assigned Department Objectives   |             |  |  |   |  |   |  |
| Teaching Method  |             |  |  |   |  |   |  |
| Outline  |             | The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc   |  |   |  |   |  |
| Style  |             | Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.  |  |   |  |   |  |
| Notice   |             | <ul style="list-style-type: none"><li>Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade.</li><li>Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction.</li><li>Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent.</li><li>If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence.</li><li>Students who miss 1/4 or more of classes will not be eligible for evaluation.</li></ul> |  |   |  |   |  |
| Characteristics of Class / Division in Learning  |             |  |  |   |  |   |  |
| <input checked="" type="checkbox"/> Active Learning  |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class  |  | <input type="checkbox"/> Instructor Professionally Experienced  |  |
|  |             |  |  |   |  |   |  |
| Course Plan  |             |  |  |   |  |   |  |
|  |             |  | Theme  |   | Goals  |   |  |
| 1st Semester<br>r  | 1st Quarter | 1st  | Guidance<br>Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc |   | Understand the purposes and objectives of this course. Split into teams in each sport and select a leader. |   |  |
|  |             | 2nd  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 3rd  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 4th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 5th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 6th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |
|  |             | 7th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             |   | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 8th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  | 2nd Quarter | 9th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Split into teams in each sport and select a leader.                                 |
|  |             | 10th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 11th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 12th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 13th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 14th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 15th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 16th | No final exam  |   |

#### Evaluation Method and Weight (%)

|                         | Approach to a class | Practical skill | Leadership | Total |
|-------------------------|---------------------|-----------------|------------|-------|
| Subtotal                | 75                  | 15              | 10         | 100   |
| Basic Proficiency       | 75                  | 0               | 0          | 75    |
| Specialized Proficiency | 0                   | 0               | 0          | 0     |
| Cross Area Proficiency  | 0                   | 15              | 10         | 25    |

|   |   |                                       |  |  |   |
|---|---|---------------------------------------|--|--|---|
| Akashi College  |   | Year                                  | 2023   | Course Title   | Sports Science II   |
| Course Information  |   |                                       |  |  |   |
| Course Code   | 5508  |                                       | Course Category  | General / Elective   |   |
| Class Format  | Skill   |                                       | Credits  | School Credit: 1   |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade  | 5th  |   |
| Term  | Second Semester   |                                       | Classes per Week   | 2  |   |
| Textbook and/or Teaching Materials  |   |                                       |  |  |   |
| Instructor  | GOTOH Takayuki, ISHIDA Masami   |                                       |  |  |   |
| Course Objectives   |   |                                       |  |  |   |
| <ul style="list-style-type: none"> <li>Participate in classes to improve students' own health and physical strength. Also, have some level of self-discipline.</li> <li>Can take action to conduct sports safely. Also, recognizes the significance of collaborating and cooperating with the team and can take the necessary action to do so.</li> </ul> |   |                                       |  |  |   |
| Rubric  |   |                                       |  |  |   |
|   | Ideal Level   |                                       | Standard Level   |  | Unacceptable Level  |
| Achievement 1   | Actively participate in classes to improve their health and physical strength. Have a high level of self-discipline.  |                                       | Participate in classes to improve their health and physical strength. Have some level of self-discipline.                      |  | Do not participate in classes. Do not strive to improve their health and physical strength. Have a poor level of self-discipline. |
| Achievement 2   | Actively participate in various sport practices and games, and are very competitive. Also have a great influence on games, etc.   |                                       | Can participate in various sport practices and games.  |  | Do not participate in various sport practices and games.  |
| Achievement 3   | Understand and can play or take on the role of a leader.  |                                       | Understand the role of a leader, but cannot play that role.  |  | Do not understand the role of a leader. Also, never play that role.   |
| Assigned Department Objectives  |   |                                       |  |  |   |
| Teaching Method   |   |                                       |  |  |   |
| Outline   | The goal of this course is for students to learn more about the fun and depth of sports so that they can build the habit of playing sports on a daily basis. This class requires an active and proactive attitude to participate. Students will split into groups and leaders will take the lead to plan, review, and implement the course content. Students can choose from: Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc  |                                       |  |  |   |
| Style   | Students are encouraged to improve their skills through games based on the rules, how to play games, and the basic skills they learned in previous years. They are also encouraged to experience the fun of enhancing teamwork while collaborating and cooperating with your team with your leader in the center. Students should take the initiative in creating a safe and welcoming class, and the instructors support their effort.   |                                       |  |  |   |
| Notice  | <ul style="list-style-type: none"> <li>Wear training wear and athletic shoes. If students fail to wear them, points will be deducted from their grade.</li> <li>Do not wear or bring accessories, watches, or any other unnecessary items. These are also eligible for grade deduction.</li> <li>Tardiness will be excused for the first 20 minutes. Students can participate in the class after 20 minutes, but their attendance will be marked as absent.</li> <li>If it is discovered that a student left class early without being excused (ditching class), their attendance for that class will be marked as absent, and their grade for previous classes will suffer a deduction equal to an absence.</li> </ul> Students who miss 1/4 or more of classes will not be eligible for evaluation. |                                       |  |  |   |
| Characteristics of Class / Division in Learning   |   |                                       |  |  |   |
| <input checked="" type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan   |   |                                       |  |  |   |
|   |   |                                       | Theme  | Goals  |   |
| 2nd Semester  | 3rd Quarter   | 1st                                   | Guidance<br>Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Understand the purposes and objectives of this course. Split into teams in each sport and select a leader. |   |
|   |   | 2nd                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|   |   | 3rd                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|   |   | 4th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|   |   | 5th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|   |   | 6th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |
|   |   | 7th                                   | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc             | Can do warm-up and practice, play games, and reflect on the class, led by a leader.                        |   |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 8th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  | 4th Quarter | 9th  | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Split into teams in each sport and select a leader.                                 |
|  |             | 10th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 11th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 12th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 13th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 14th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 15th | Baseball, softball, soccer, futsal, tennis, basketball, volleyball, badminton, table tennis, training, flying disc | Can do warm-up and practice, play games, and reflect on the class, led by a leader. |
|  |             | 16th | No final exam  |   |

| Evaluation Method and Weight (%) |                     |                 |            |       |
|----------------------------------|---------------------|-----------------|------------|-------|
|                                  | Approach to a class | Practical skill | Leadership | Total |
| Subtotal                         | 75                  | 15              | 10         | 100   |
| Basic Proficiency                | 75                  | 0               | 0          | 75    |
| Specialized Proficiency          | 0                   | 0               | 0          | 0     |
| Cross Area Proficiency           | 0                   | 15              | 10         | 25    |

|  |  |                                       |   |   |  |
|--|--|---------------------------------------|---|---|--|
| Akashi College   |  | Year                                  | 2023  | Course Title  | T O E I C I  |
| Course Information   |  |                                       |   |   |  |
| Course Code  | 5509   |                                       | Course Category   | General / Elective                                  |  |
| Class Format   | その他  |                                       | Credits   | School Credit: 1                                    |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade   | 5th   |  |
| Term   | Year-round   |                                       | Classes per Week  | 1   |  |
| Textbook and/or Teaching Materials   | None   |                                       |   |   |  |
| Instructor   | INOUE Hidetoshi  |                                       |   |   |  |
| Course Objectives  |  |                                       |   |   |  |
| 1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 430 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range. |  |                                       |   |   |  |
| Rubric   |  |                                       |   |   |  |
|  | Ideal Level  |                                       | Standard Level  |   | Unacceptable Level   |
| 1) cross-cultural understanding and adaptability   | The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.   |                                       | The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |   | The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |
| 2) English knowledge   | The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |                                       | The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |   | The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |
| Assigned Department Objectives   |  |                                       |   |   |  |
| Teaching Method  |  |                                       |   |   |  |
| Outline  | The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.  |                                       |   |   |  |
| Style  | The credits are obtained according to tests results, no classes  |                                       |   |   |  |
| Notice   | To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers. |                                       |   |   |  |
| Characteristics of Class / Division in Learning  |  |                                       |   |   |  |
| <input type="checkbox"/> Active Learning   |  | <input type="checkbox"/> Aided by ICT |   | <input type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |                                       |   |   |  |
|  |  |                                       | Theme   | Goals   |  |
| 1st Semester   | 1st Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |
|  |  | 5th                                   |   |   |  |
|  |  | 6th                                   |   |   |  |
|  |  | 7th                                   |   |   |  |
|  |  | 8th                                   | No mid-term Exam  |   |  |
|  | 2nd Quarter  | 9th                                   |   |   |  |
|  |  | 10th                                  |   |   |  |
|  |  | 11th                                  |   |   |  |
|  |  | 12th                                  |   |   |  |
|  |  | 13th                                  |   |   |  |
|  |  | 14th                                  |   |   |  |
|  |  | 15th                                  |   |   |  |
|  |  | 16th                                  | No end-term Exam  |   |  |
| 2nd Semester   | 3rd Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |

|  |             |      |                  |  |
|--|-------------|------|------------------|--|
|  |             | 5th  |                  |  |
|  |             | 6th  |                  |  |
|  |             | 7th  |                  |  |
|  |             | 8th  | No mid-term Exam |  |
|  | 4th Quarter | 9th  |                  |  |
|  |             | 10th |                  |  |
|  |             | 11th |                  |  |
|  |             | 12th |                  |  |
|  |             | 13th |                  |  |
|  |             | 14th |                  |  |
|  |             | 15th |                  |  |
|  |             | 16th | No end-term Exam |  |

|                                  |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|
| Evaluation Method and Weight (%) |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Specialized Proficiency | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |



|  |  |                                       |   |   |  |
|--|--|---------------------------------------|---|---|--|
| Akashi College   |  | Year                                  | 2023  | Course Title  | T O E I C II   |
| Course Information   |  |                                       |   |   |  |
| Course Code  | 5510   |                                       | Course Category   | General / Elective                                  |  |
| Class Format   | その他  |                                       | Credits   | School Credit: 2                                    |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade   | 5th   |  |
| Term   | Year-round   |                                       | Classes per Week  | 2   |  |
| Textbook and/or Teaching Materials   | None   |                                       |   |   |  |
| Instructor   | INOUE Hidetoshi  |                                       |   |   |  |
| Course Objectives  |  |                                       |   |   |  |
| 1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 500 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range. |  |                                       |   |   |  |
| Rubric   |  |                                       |   |   |  |
|  | Ideal Level  |                                       | Standard Level  |   | Unacceptable Level   |
| 1) cross-cultural understanding and adaptability   | The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.   |                                       | The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |   | The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |
| 2) English knowledge   | The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |                                       | The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |   | The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |
| Assigned Department Objectives   |  |                                       |   |   |  |
| Teaching Method  |  |                                       |   |   |  |
| Outline  | The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.  |                                       |   |   |  |
| Style  | The credits are obtained according to tests results, no classes  |                                       |   |   |  |
| Notice   | To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers. |                                       |   |   |  |
| Characteristics of Class / Division in Learning  |  |                                       |   |   |  |
| <input type="checkbox"/> Active Learning   |  | <input type="checkbox"/> Aided by ICT |   | <input type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |                                       |   |   |  |
|  |  |                                       | Theme   | Goals   |  |
| 1st Semester   | 1st Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |
|  |  | 5th                                   |   |   |  |
|  |  | 6th                                   |   |   |  |
|  |  | 7th                                   |   |   |  |
|  |  | 8th                                   | No mid-term Exam  |   |  |
|  | 2nd Quarter  | 9th                                   |   |   |  |
|  |  | 10th                                  |   |   |  |
|  |  | 11th                                  |   |   |  |
|  |  | 12th                                  |   |   |  |
|  |  | 13th                                  |   |   |  |
|  |  | 14th                                  |   |   |  |
|  |  | 15th                                  |   |   |  |
|  |  | 16th                                  | No end-term Exam  |   |  |
| 2nd Semester   | 3rd Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |

|  |             |      |                  |  |
|--|-------------|------|------------------|--|
|  |             | 5th  |                  |  |
|  |             | 6th  |                  |  |
|  |             | 7th  |                  |  |
|  |             | 8th  | No mid-term Exam |  |
|  | 4th Quarter | 9th  |                  |  |
|  |             | 10th |                  |  |
|  |             | 11th |                  |  |
|  |             | 12th |                  |  |
|  |             | 13th |                  |  |
|  |             | 14th |                  |  |
|  |             | 15th |                  |  |
|  |             | 16th | No end-term Exam |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Specialized Proficiency | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |  |                                       |   |   |  |
|--|--|---------------------------------------|---|---|--|
| Akashi College   |  | Year                                  | 2023  | Course Title  | T O E I C Ⅲ  |
| Course Information   |  |                                       |   |   |  |
| Course Code  | 5511   |                                       | Course Category   | General / Elective                                  |  |
| Class Format   | その他  |                                       | Credits   | School Credit: 3                                    |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade   | 5th   |  |
| Term   | Year-round   |                                       | Classes per Week  | 3   |  |
| Textbook and/or Teaching Materials   | None   |                                       |   |   |  |
| Instructor   | INOUE Hidetoshi  |                                       |   |   |  |
| Course Objectives  |  |                                       |   |   |  |
| 1) The student will foster cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. The student should acquire 650 or more points in the test, what shows that the students English knowledge fulfills the needs of everyday life and allows business communication within a limited range. |  |                                       |   |   |  |
| Rubric   |  |                                       |   |   |  |
|  | Ideal Level  |                                       | Standard Level  |   | Unacceptable Level   |
| 1) cross-cultural understanding and adaptability   | The student has fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background.   |                                       | The student has fostered some cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |   | The student has not fostered cross-cultural understanding and cross-cultural adaptability by tackling exam questions that require knowledge of English and the English-speaking cultural background. |
| 2) English knowledge   | The students have acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |                                       | The students have acquired some English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |   | The students have not acquired English knowledge that fulfills the needs of everyday life and allows business communication within a limited range.  |
| Assigned Department Objectives   |  |                                       |   |   |  |
| Teaching Method  |  |                                       |   |   |  |
| Outline  | The ability to establish a problem and find the appropriate solution to this problem is a skill necessary at KOSEN (higher education institution). A skill required to live through the 21st century. The students that entered KOSEN need to acquire these skills at an early stage. In this course, the students will learn methods of self-learning and autonomously learning, and not "study" as they have learned at junior high school. Also, while cooperating with colleagues, the students will learn the process of problem discovery and resolution.  |                                       |   |   |  |
| Style  | The credits are obtained according to tests results, no classes  |                                       |   |   |  |
| Notice   | To apply for the credits is necessary the test scores, and the student should apply for the credits during the period stipulated by the students' affairs office. Applications without the test scores or after the application period will not be accepted. The indicator of English communication capability will be measured utilizing TOEIC (Test of English for International Communication), a test developed by the US Test and Development Public Institution (Educational Testing Service), which has the largest scale and know-how in the world. Through this test, the student will aim to improve his or her English language skills, and motivation to learn English. The test score is also useful for the students' careers. |                                       |   |   |  |
| Characteristics of Class / Division in Learning  |  |                                       |   |   |  |
| <input type="checkbox"/> Active Learning   |  | <input type="checkbox"/> Aided by ICT |   | <input type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |                                       |   |   |  |
|  |  |                                       | Theme   | Goals   |  |
| 1st Semester   | 1st Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |
|  |  | 5th                                   |   |   |  |
|  |  | 6th                                   |   |   |  |
|  |  | 7th                                   |   |   |  |
|  |  | 8th                                   | No mid-term Exam  |   |  |
|  | 2nd Quarter  | 9th                                   |   |   |  |
|  |  | 10th                                  |   |   |  |
|  |  | 11th                                  |   |   |  |
|  |  | 12th                                  |   |   |  |
|  |  | 13th                                  |   |   |  |
|  |  | 14th                                  |   |   |  |
|  |  | 15th                                  |   |   |  |
|  |  | 16th                                  | No end-term Exam  |   |  |
| 2nd Semester   | 3rd Quarter  | 1st                                   |   |   |  |
|  |  | 2nd                                   |   |   |  |
|  |  | 3rd                                   |   |   |  |
|  |  | 4th                                   |   |   |  |

|  |             |      |                  |  |
|--|-------------|------|------------------|--|
|  |             | 5th  |                  |  |
|  |             | 6th  |                  |  |
|  |             | 7th  |                  |  |
|  |             | 8th  | No mid-term Exam |  |
|  | 4th Quarter | 9th  |                  |  |
|  |             | 10th |                  |  |
|  |             | 11th |                  |  |
|  |             | 12th |                  |  |
|  |             | 13th |                  |  |
|  |             | 14th |                  |  |
|  |             | 15th |                  |  |
|  |             | 16th | No end-term Exam |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Specialized Proficiency | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |

|  |   |  |   |  |  |
|--|---|--|---|--|--|
| Akashi College   |   | Year   | 2023  | Course Title   | Overseas Training Ⅲ  |
| Course Information   |   |  |   |  |  |
| Course Code  | 5512  |  | Course Category   | General / Elective   |  |
| Class Format   | Practical training  |  | Credits   | School Credit: 1   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade   | 5th  |  |
| Term   | Year-round  |  | Classes per Week  | 1  |  |
| Textbook and/or Teaching Materials   |   |  |   |  |  |
| Instructor   | All faculty of the department   |  |   |  |  |
| Course Objectives  |   |  |   |  |  |
| (1) Can make efforts to increase knowledge and skills through participating in training overseas.<br>(2) Can develop a broad perspective by participating in training in different cultures.<br>(3) Can communicate with people involved in the local area using English, etc. |   |  |   |  |  |
| Rubric   |   |  |   |  |  |
|  | Ideal Level   |  | Standard Level  |  | Unacceptable Level   |
| Achievement 1  | Can fully make efforts to increase knowledge and skills through participating in training overseas.   |  | Can make efforts to increase knowledge and skills through participating in training overseas. |  | Cannot make efforts to increase knowledge and skills through participating in training overseas. |
| Achievement 2  | Can fully develop a broad perspective successfully by participating in training in different cultures.  |  | Can develop a broad perspective by participating in training in different cultures.           |  | Cannot develop a broad perspective by participating in training in different cultures.           |
| Achievement 3  | Can fully communicate with people involved in the local area smoothly using English, etc.   |  | Can communicate with people involved in the local area using English, etc.                    |  | Cannot communicate with people involved in the local area using English, etc.                    |
| Assigned Department Objectives   |   |  |   |  |  |
| Teaching Method  |   |  |   |  |  |
| Outline  | The objectives of this course are to develop the ability to think things from various perspectives and to communicate through a variety of training experiences overseas. The training can be carried out during summer vacation, etc. The number of days for the training must be more than five days. This course's content will amount to over 45 hours in total. These hours include training overseas, preliminary guidance (manner lesson, preliminary research on the training destination), debrief session, and self-study time for preparing reports to be submitted to relevant institutions, etc. |  |   |  |  |
| Style  | Pre-orientation, on-site training, and debriefing   |  |   |  |  |
| Notice   | Students are required to keep in close contact with their class teacher or supervisor. During the training, students are required to actively engage and communicate with the local people and act appropriately as a trainee, including their clothing and language.<br>No conditions for missing classes that will not be eligible for a passing grade.   |  |   |  |  |
| Characteristics of Class / Division in Learning  |   |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning  |   | <input checked="" type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class |  |
|  |   |  |   | <input type="checkbox"/> Instructor Professionally Experienced |  |
| Course Plan  |   |  |   |  |  |
|  |   |  | Theme   | Goals  |  |
| 1st Semester   | 1st Quarter   | 1st  |   |  |  |
|  |   | 2nd  |   |  |  |
|  |   | 3rd  |   |  |  |
|  |   | 4th  |   |  |  |
|  |   | 5th  |   |  |  |
|  |   | 6th  |   |  |  |
|  |   | 7th  |   |  |  |
|  |   | 8th  |   |  |  |
|  | 2nd Quarter   | 9th  |   |  |  |
|  |   | 10th   |   |  |  |
|  |   | 11th   |   |  |  |
|  |   | 12th   |   |  |  |
|  |   | 13th   |   |  |  |
|  |   | 14th   |   |  |  |
|  |   | 15th   |   |  |  |
|  |   | 16th   | No final exam   |  |  |
| 2nd Semester   | 3rd Quarter   | 1st  |   |  |  |
|  |   | 2nd  |   |  |  |
|  |   | 3rd  |   |  |  |
|  |   | 4th  |   |  |  |
|  |   | 5th  |   |  |  |
|  |   | 6th  |   |  |  |
|  |   | 7th  |   |  |  |

|  |                |      |               |  |
|--|----------------|------|---------------|--|
|  | 4th<br>Quarter | 8th  |               |  |
|  |                | 9th  |               |  |
|  |                | 10th |               |  |
|  |                | 11th |               |  |
|  |                | 12th |               |  |
|  |                | 13th |               |  |
|  |                | 14th |               |  |
|  |                | 15th |               |  |
|  |                | 16th | No final exam |  |

Evaluation Method and Weight (%)

|                         |        |              |       |
|-------------------------|--------|--------------|-------|
|                         | Report | Presentation | Total |
| Subtotal                | 50     | 50           | 100   |
| Basic Proficiency       | 0      | 0            | 0     |
| Specialized Proficiency | 0      | 0            | 0     |
| Cross Area Proficiency  | 50     | 50           | 100   |

|  |   |  |                  |   |                              |
|--|---|--|------------------|---|------------------------------|
| Akashi College   |   | Year   | 2023             | Course Title  | Intellectual Property Rights |
| Course Information   |   |  |                  |   |                              |
| Course Code  | 5513  |  | Course Category  | Specialized / Compulsory  |                              |
| Class Format   | Lecture   |  | Credits          | School Credit: 1  |                              |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |  | Student Grade    | 5th   |                              |
| Term   | First Semester  |  | Classes per Week | 2   |                              |
| Textbook and/or Teaching Materials   |   |  |                  |   |                              |
| Instructor   | MORISADA Yuji   |  |                  |   |                              |
| Course Objectives  |   |  |                  |   |                              |
| (1) Understand and can explain to others the systems of intellectual property rights in Japan and other countries (international and foreign).<br>(2) Acquire the knowledge to demonstrate appropriate intellectual property management capabilities within an organization as a research and development officer in a university or company, and can take the lead within an organization.<br>(3) Understand the flow of application procedures (in Japan and other countries), and understand which stage of the procedure they are in when communicating with a patent attorney or the Japan Patent Office (relevant organizations).<br>(4) Understand the importance of investigation, and can decide whether to conduct all of the investigation by themselves or to ask an expert to do it.<br>(5) Can acquire the computer literacy for doing the investigation they need, and actually implement it. |   |  |                  |   |                              |
| Rubric   |   |  |                  |   |                              |
|  | Ideal Level   | Standard Level   |                  | Unacceptable Level  |                              |
| Achievement 1  | Understand and can explain to others the systems of intellectual property rights in Japan and other countries.  | Understand and can explain to others the systems of intellectual property rights in Japan.                                 |                  | Cannot explain to others the system of intellectual property rights in Japan and other countries.                             |                              |
| Achievement 2  | Acquire the knowledge to demonstrate appropriate intellectual property management capabilities within an organization, and can take the lead within an organization.  | Can explain the knowledge to demonstrate appropriate intellectual property management capabilities within an organization. |                  | Cannot explain the knowledge to demonstrate appropriate intellectual property management capabilities within an organization. |                              |
| Achievement 3  | Understand the flow of application procedures and what stage of the process they are in when communicating with a patent attorney or the Japan Patent Office.   | Understand the flow of application procedures.   |                  | Do not understand the flow of application procedures.   |                              |
| Achievement 4  | Understand the importance of investigation, and can decide whether to conduct all of the investigation by themselves or to ask an expert to do it.  | Can understand the importance of investigation and can determine the need for investigation.                               |                  | Do not understand the importance of investigation.  |                              |
| Achievement 5  | Can use the computer literacy necessary to conduct investigation themselves, and actually investigate.  | Can explain the computer literacy necessary to conduct investigation themselves.   |                  | Cannot acquire the computer literacy necessary to conduct investigation themselves.   |                              |
| Assigned Department Objectives   |   |  |                  |   |                              |
| Teaching Method  |   |  |                  |   |                              |
| Outline  | 1) Basic theory of intellectual property rights (patent rights, utility model rights, design rights, trademark rights, copyright, etc.)<br>2) Methodologies for intellectual property management for researchers and developers (focusing on patent rights)<br>3) Flow of application procedures, etc. (explain the flows from application to registration, and after registration)<br>4) Flow of international application procedures, etc. (explain respective organizations and the flow after application, focusing on the PCT international patent application system)<br>5) Matters related to investigation on intellectual property rights: Lectures and exercises (explain the purpose of investigating patents, utility models, designs, and trademarks, and research tools; also do search exercises using the online J-PlatPat platform).<br>This course will be taught by instructors who have experience in the procedures and consultation services relating to intellectual property rights in general. |  |                  |   |                              |
| Style  | It involves lectures on patents, designs, copyrights, etc.<br>The class will be carried out mainly with lectures, and there will be PC-based research exercises, etc. as appropriate.   |  |                  |   |                              |
| Notice   | Students are expected to take this course with a sense of reality, imagining that there is a creation (invention, etc.) that they or their friend/acquaintance researched and developed, how they can protect it and pursue rights for it. Students should be interested in news related to intellectual property rights on a daily basis, and develop a habit of thinking.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.<br>The liaison for this course is the above-mentioned person.  |  |                  |   |                              |
| Characteristics of Class / Division in Learning  |   |  |                  |   |                              |
| <input checked="" type="checkbox"/> Active Learning  |   | <input type="checkbox"/> Aided by ICT  |                  | <input checked="" type="checkbox"/> Applicable to Remote Class  |                              |
| <input checked="" type="checkbox"/> Instructor Professionally Experienced  |   |  |                  |   |                              |
| Course Plan  |   |  |                  |   |                              |
|  |   |  | Theme            | Goals   |                              |

|              |             |      |   |  |
|--------------|-------------|------|---|--|
| 1st Semester | 1st Quarter | 1st  | Summary of intellectual property rights   | Understand an overview of intellectual property rights.  |
|              |             | 2nd  | Patents I   | Understand the outline of the patent system, its purpose, and the patent (registration) requirements, etc.   |
|              |             | 3rd  | Patents II  | Understand how to judge novelty and inventiveness.   |
|              |             | 4th  | Patents III   | Understand the process of creating a broad and strong patent invention from ideas.   |
|              |             | 5th  | Patents IV  | Understand the flow of procedures and employee inventions.   |
|              |             | 6th  | Patents V / International patent application system and patent systems in other countries | Understand necessary of applying International patent.   |
|              |             | 7th  | Utility model I   | Understand the outline of the utility model, its purpose, and its registration requirements, etc.  |
|              |             | 8th  | Investigating patents and utility models  | Understand and implement methods for investigating patents and utility models.   |
|              | 2nd Quarter | 9th  | Design rights I   | Understand patents and utility models. Understand the outline of the design registration system.   |
|              |             | 10th | Designs II  | Understand the purpose of the design registration system, registration requirements, special design registration, the effectiveness of design rights, etc.                           |
|              |             | 11th | Trademarks  | Understand the trademark precautions directly related to the case of creation of soy sauce with broth.   |
|              |             | 12th | Copyrights I  | Understand the outline of the copyright law (works, copyrights, moral rights, related rights, derivative works, copyright restrictions, etc.).                                       |
|              |             | 13th | Copyrights II   | Understand the infringement of rights, and copyright Q&A.  |
|              |             | 14th | Unfair Competition Prevention Act, geographical Indications, etc.                         | Understand Unfair Competition Prevention Act, and geographical indications.  |
|              |             | 15th | Investigation of design or trademark<br>Summary of intellectual property rights           | Understand and implement investigation of design or trademark. Understand the differences between intellectual property rights (patent, utility model, design, trademark, copyright) |
|              |             | 16th | Final exam  |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |



|   |             |   |   |   |  |  |  |
|---|-------------|---|---|---|--|--|--|
| Akashi College  |             | Year  | 2023  |   | Course Title   | Computer Simulation  |  |
| Course Information  |             |   |   |   |  |  |  |
| Course Code   |             | 5514  |   | Course Category   |  | Specialized / Compulsory   |  |
| Class Format  |             | Lecture   |   | Credits   |  | School Credit: 1   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course  |   | Student Grade   |  | 5th  |  |
| Term  |             | Second Semester   |   | Classes per Week  |  | 2  |  |
| Textbook and/or Teaching Materials  |             |   |   |   |  |  |  |
| Instructor  |             | OHMUKAI Masato  |   |   |  |  |  |
| Course Objectives   |             |   |   |   |  |  |  |
| 1. Can explain the reason why numerical calculations yield errors.<br>2. Can describe a solution method (algorithm) on basic math problems. |             |   |   |   |  |  |  |
| Rubric  |             |   |   |   |  |  |  |
|   |             | Ideal Level   |   | Standard Level  |  | Unacceptable Level   |  |
| Achievement 1   |             | Can explain the method so as to avoid major errors on numerical calculations  |   | Can explain causes why major errors on numerical calculations occur.                        |  | Cannot explain the reasons why major errors on numerical calculations occur. |  |
| Achievement 2   |             | Can accurately explain a solution method (algorithm) for all specified problems.  |   | Can explain an overview of the methods (algorithms) for finding solutions to some problems. |  | Cannot explain the method (algorithm) of finding solutions to problems.      |  |
| Assigned Department Objectives  |             |   |   |   |  |  |  |
| Teaching Method   |             |   |   |   |  |  |  |
| Outline   |             | A simulation is the imitation of a phenomenon by reducing it into a model. The aim of this course is to conduct computer-based experiments on simple models of natural and social phenomena that are difficult to reproduce and observe, to identify the characteristics of the phenomenon and to deepen the understanding of the contents. In classes, we will introduce the basic concepts and the latest examples of modeling and simulation in the first half, and practice the methods to solve their own challenges by programming and explaining a simulator in the second half. |   |   |  |  |  |
| Style   |             | Classes are conducted through lectures and exercises.<br>Lectures will be conducted through handouts.<br>In addition to what students learned in classes, they will perform individual activities on assignments of their choosing.<br>Exercises are supposed to build a system to help students in their own graduation research.<br>Students will be evaluated on assignment progress and the work produced during the exercises, and presentations.  |   |   |  |  |  |
| Notice  |             | As this course is built on the content of Data Structures and Algorithms, Computer Programming, and Probability and Statistics, it's recommended that students review these textbooks, materials, etc. as references during the classes.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.   |   |   |  |  |  |
| Characteristics of Class / Division in Learning   |             |   |   |   |  |  |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class                              |  | <input type="checkbox"/> Instructor Professionally Experienced               |  |
|   |             |   |   |   |  |  |  |
| Course Plan   |             |   |   |   |  |  |  |
|   |             |   | Theme   |   | Goals  |  |  |
| 2nd Semester<br>r   | 3rd Quarter | 1st   | Introduction                                      |   | Understand the objectives and the grading method, etc. of the course.  |  |  |
|   |             | 2nd   | Algorithms, calculations and recurrence relations |   | Understand time and space complexity of algorithms.<br>Can derive (time) complexity of some algorithms.<br>Can derive recurrence relations which give solutions of problems. |  |  |
|   |             | 3rd   | Repetitive methods                                |   | Can derive repetitive methods which give solutions of problems.  |  |  |
|   |             | 4th   | Errors, loss of significance, data loss           |   | Can explain the cause of phenomena that occurs in numerical calculations, such as truncation errors, loss of significance, data loss   |  |  |
|   |             | 5th   | Nonlinear equations                               |   | Can explain the Newton method, the bisection method ,and false position method .   |  |  |
|   |             | 6th   | Simultaneous equations 1                          |   | Can explain algorithms of Gaussian elimination and sweep out methods.  |  |  |
|   |             | 7th   | Simultaneous equations 2                          |   | Can explain algorithms of Jacobi, Gauss-Seidel and SOR method.   |  |  |
|   |             | 8th   | Exercise  |   | Exercise on the contents of classes in the first half of the semester.   |  |  |
|   | 4th Quarter | 9th   | Eigenvalue  |   | Can explain algorithms of Jacobi and the power methods for obtaining eigenvalues of matrices.  |  |  |
|   |             | 10th  | Interpolation of functions                        |   | Can explain linear interpolation, Newton forward linear interpolation and lagrange linear interpolation.   |  |  |
|   |             | 11th  | Method of least squares                           |   | Can explain the method of least squares.   |  |  |

|  |  |      |   |  |
|--|--|------|---|--|
|  |  | 12th | Numerical differentials   | Can calculate first and second order numerical differentials with forward, central and backward formulas.<br>Can calculate first order numerical differential with lagrange interpolation. |
|  |  | 13th | Numerical integrals   | Can calculate numerical integrals with rectangle, trapezoidal and Simpson's rule.  |
|  |  | 14th | Initial value problem and Boundary value problem of ordinary differential equations | Can explain algorithms of Euler, Heun's and Runge-Kutta method for the Initial value problem.<br>Can explain an algorithm of finite-difference method for the boundary value problem.      |
|  |  | 15th | Review  | Review the content of classes in the second half of the semester.  |
|  |  | 16th | Final exam  |  |

| Evaluation Method and Weight (%) |             |          |       |
|----------------------------------|-------------|----------|-------|
|                                  | Examination | Exercise | Total |
| Subtotal                         | 70          | 30       | 100   |
| Basic Proficiency                | 0           | 0        | 0     |
| Specialized Proficiency          | 70          | 30       | 100   |
| Cross Area Proficiency           | 0           | 0        | 0     |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
| Akashi College   |  | Year   | 2023   | Course Title   | Graduation Thesis  |
| Course Information   |  |  |  |  |  |
| Course Code  | 5515   |  | Course Category  | Specialized / Compulsory   |  |
| Class Format   | Seminar  |  | Credits  | School Credit: 9   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade  | 5th  |  |
| Term   | Year-round   |  | Classes per Week   | 前期:6 後期:12   |  |
| Textbook and/or Teaching Materials   |  |  |  |  |  |
| Instructor   | All faculty of the department  |  |  |  |  |
| Course Objectives  |  |  |  |  |  |
| (1) Can set a research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective.<br>(2) Master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.<br>(3) Can develop self-learning abilities to continuously explore things.<br>(4) Can read and understand Japanese and English technical papers related to the research topic and use them for their own research.<br>(5) Can summarize the research results obtained as technical papers, and convey them to others through a presentation to have a discussion. |  |  |  |  |  |
| Rubric   |  |  |  |  |  |
|  | Ideal Level  |  | Standard Level   |  | Unacceptable Level   |
| Achievement 1  | Can set an appropriate research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective.  |  | Can set a research topic on their own by applying and integrating basic knowledge of engineering, and find and solve problems systematically and practically from a broader perspective. |  | Cannot set a research topic on their own by applying and integrating basic knowledge of engineering, or find and solve problems systematically and practically from a broader perspective. |
| Achievement 2  | Deeply master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.  |  | Master data processing technologies and the theories and methods of information transfer, and can apply them to various design and theoretical analyses.                                 |  | Cannot master data processing technologies and the theories and methods of information transfer, or apply them to various design and theoretical analyses.                                 |
| Achievement 3  | Can develop self-learning abilities to continuously and accurately explore things  |  | Can develop self-learning abilities to continuously explore things.  |  | Cannot develop self-learning abilities to continuously explore things.   |
|  | Can read and deeply understand Japanese and English technical papers related to the research topic and use them appropriately for their own research.  |  | Can read and understand Japanese and English technical papers related to the research topic and use them for their own study.  |  | Cannot read Japanese and English technical papers related to the research topic, or understand and use them for own research.  |
|  | Can summarize the research results obtained as technical papers, and accurately convey them to others through a presentation to have a deep discussion.  |  | Can summarize the research results obtained as technical papers, and convey them to others through a presentation to have a discussion.  |  | Cannot summarize the research results obtained as technical papers, or convey them to others through a presentation to have a discussion.  |
| Assigned Department Objectives   |  |  |  |  |  |
| Teaching Method  |  |  |  |  |  |
| Outline  | The aim of this class is to understand and analyze issues in their research topics based on the results of the learning up to the 4th year and the basic knowledge gained through Preliminaries to Graduation Thesis, and solve problems voluntarily and continuously by taking appropriate approach. Another aim is to convey research results accurately to others through papers and presentations. |  |  |  |  |
| Style  | Graduation Thesis class is conducted by several faculty members (laboratories). Students will work on document research, experiments, simulations, examinations, etc. under the guidance of their supervisor at one of these laboratories.   |  |  |  |  |
| Notice   | They are expected to frequently discuss research results with their supervisor.<br>If they cannot conduct research during the hours of Graduation Thesis class, transfer to other hours with permission from the supervisor.<br>Students who spend less than 202.5 hours on research will not be eligible for evaluation.  |  |  |  |  |
| Characteristics of Class / Division in Learning  |  |  |  |  |  |
| <input checked="" type="checkbox"/> Active Learning  |  | <input checked="" type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |  |  |  |  |
|  |  |  | Theme  | Goals  |  |
| 1st Semester   | 1st Quarter  | 1st  | Graduation research  | Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor. |  |
|  |  | 2nd  | Same as above  | Same as above  |  |
|  |  | 3rd  | Same as above  | Same as above  |  |
|  |  | 4th  | Same as above  | Same as above  |  |
|  |  | 5th  | Same as above  | Same as above  |  |

|              |             |      |   |  |
|--------------|-------------|------|---|--|
| 2nd Semester |             | 6th  | Same as above   | Same as above  |
|              |             | 7th  | Same as above   | Same as above  |
|              |             | 8th  | Same as above   | Same as above  |
|              | 2nd Quarter | 9th  | Same as above   | Same as above  |
|              |             | 10th | Same as above   | Same as above  |
|              |             | 11th | Same as above   | Same as above  |
|              |             | 12th | Same as above   | Same as above  |
|              |             | 13th | Same as above   | Same as above  |
|              |             | 14th | Same as above   | Same as above  |
|              |             | 15th | Same as above   | Same as above  |
|              |             | 16th | No final exam   |  |
|              |             | 1st  | Graduation research   | Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor. |
|              |             | 2nd  | Preparation for the interim presentation of the graduation research | Can create posters and handouts to use in the interim presentation of the graduation research.                 |
|              |             | 3rd  | Interim presentation of the graduation research                     | Can present the research results so far using posters.   |
|              |             | 4th  | Graduation research   | Can independently conduct document research, experiments, simulations, examination, etc. under the supervisor. |
|              |             | 5th  | Same as above   | Same as above  |
|              |             | 6th  | Same as above   | Same as above  |
|              |             | 7th  | Same as above   | Same as above  |
|              |             | 8th  | Same as above   | Same as above  |
|              |             | 9th  | Same as above   | Same as above  |
|              |             | 10th | Writing graduation thesis   | Can compile the results of the graduation research and write a graduation thesis.                              |
|              |             | 11th | Same as above   | Same as above  |
|              |             | 12th | Same as above   | Same as above  |
|              |             | 13th | Preparation for the graduation research presentation                | Can create a resume to hand out in the graduation research presentation.                                       |
|              |             | 14th | Same as above   | Can create slides to use in the graduation research presentations.   |
|              |             | 15th | Graduation research presentation                                    | Can use slides to present the results of the graduation research orally and answer questions appropriately.    |
|              |             | 16th | No final exam   |  |

#### Evaluation Method and Weight (%)

|                         | Initiatives | Interim report | Graduation thesis | Graduation meeting for presenting research papers | Total |
|-------------------------|-------------|----------------|-------------------|---|-------|
| Subtotal                | 10          | 20             | 50                | 20  | 100   |
| Basic Proficiency       | 0           | 0              | 0                 | 0   | 0     |
| Specialized Proficiency | 10          | 20             | 50                | 20  | 100   |
| Cross Area Proficiency  | 0           | 0              | 0                 | 0   | 0     |

|  |             |  |  |  |  |  |  |
|--|-------------|--|--|--|--|--|--|
| Akashi College   |             | Year   | 2023   |  | Course Title   | Power Electronics  |  |
| Course Information   |             |  |  |  |  |  |  |
| Course Code  |             | 5516   |  | Course Category  |  | Specialized / Compulsory   |  |
| Class Format   |             | Lecture  |  | Credits  |  | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade  |  | 5th  |  |
| Term   |             | Second Semester  |  | Classes per Week   |  | 2  |  |
| Textbook and/or Teaching Materials   |             |  |  |  |  |  |  |
| Instructor   |             | HIROTA Atsushi   |  |  |  |  |  |
| Course Objectives  |             |  |  |  |  |  |  |
| 1) The ability to understand the operating principles of various power electronics circuits, calculate various quantities such as average voltage, currents, and power, and evaluate them quantitatively.<br>2) The ability to understand the advantages and disadvantages of using power electronics technology, understand the problems, and think about what measures are necessary.<br>3) The ability to voluntarily and continuously organize reports and materials through exercise problems and reports, and to find the characteristics of power electronics circuits and their optimal range of applications. |             |  |  |  |  |  |  |
| Rubric   |             |  |  |  |  |  |  |
|  |             | Ideal Level  |  | Standard Level   |  | Unacceptable Level   |  |
| Achievement 1  |             | Fully understand the operating principles of various power electronics circuits, and can calculate various quantities such as average voltage, currents, and power, and evaluate them quantitatively.  |  | Understand the operating principles of various power electronics circuits, and to calculate various quantities such as average voltage, current, and power, and to evaluate them quantitatively                |  | Do not understand the operating principles of various power electronics circuits, and cannot calculate various quantities such as average voltage, current, and power, or evaluate them quantitatively       |  |
| Achievement 2  |             | Understand the advantages and disadvantages of using power electronics technology, understand the issues, and can fully consider what measures are necessary   |  | Understand the advantages and disadvantages of using power electronics technology, understand the issues, and can consider what measures are necessary   |  | Do not understand the advantages and disadvantages of using power electronics technology, understand the issues, and cannot consider what measures are necessary   |  |
| Achievement 3  |             | Can voluntarily and continuously organize reports and materials through exercise problems and reports, and can effectively find the characteristics of power electronics circuits and their optimal range of applications.   |  | Can voluntarily and continuously organize reports and materials through exercise problems and reports, and can find the characteristics of power electronics circuits and their optimal range of applications. |  | Cannot voluntarily and continuously organize reports and materials through exercise problems and reports, or find the characteristics of power electronics circuits and their optimal range of applications. |  |
| Assigned Department Objectives   |             |  |  |  |  |  |  |
| Teaching Method  |             |  |  |  |  |  |  |
| Outline  |             | Power-electronics technology is an interdisciplinary field for converting electricity using semiconductor switch devices. The range of applications includes consumer electronics devices, information field, electric power applications, and renewable energy generation, making it an essential technology for modern social life. This course will explain and deepen students' understanding of the basics of power electronics and make them understand the importance of this technology.   |  |  |  |  |  |
| Style  |             | Classes will be conducted focusing on lectures, and explanations of related technologies may be added.   |  |  |  |  |  |
| Notice   |             | This course requires students to use the knowledge they have acquired in the past, such as the content of Electric Circuits and Circuit Theory, and the Fourier transform, therefore it will be necessary for them to review what they have already learned independently, in addition to the studying for this course. Take notes and thoroughly review the material. Makeup exams, etc. may be held if students with outstanding efforts fall short of the passing score by a small margin, and make a request. All assignments are required to be submitted.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation. |  |  |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |  |  |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class   |  | <input type="checkbox"/> Instructor Professionally Experienced   |  |
| Course Plan  |             |  |  |  |  |  |  |
|  |             |  | Theme  |  | Goals  |  |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st  | Power electronics overview                     |  | Understand the position, importance, and current situation of power electronics technology, and actual examples. |  |  |
|  |             | 2nd  | Semiconductor devices for electrical power (1) |  | Understand the current-controlled semiconductor switching devices used in power electronics equipment.           |  |  |
|  |             | 3rd  | Semiconductor devices for electrical power (2) |  | Understand the voltage-controlled semiconductor switching devices used in power electronics equipment.           |  |  |
|  |             | 4th  | Semiconductor devices for electrical power (3) |  | Understand the new type semiconductor switching devices used in power electronics equipment.                     |  |  |
|  |             | 5th  | DC-DC converter (1)                            |  | Understand the basics of DC-DC converters and the circuit operation of a buck DC-DC converter.                   |  |  |
|  |             | 6th  | DC-DC converter (2)                            |  | Understand the circuit operation of a boost DC-DC converter.   |  |  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 7th  | DC-DC converter (3)                        | Understand the circuit operation of a buck/boost DC-DC converter.   |
|  |             | 8th  | Review                                     | Understand the contents of the first half through exams or exercises  |
|  | 4th Quarter | 9th  | DC-AC conversion (1)                       | Understand the basics of DC-AC conversion through an inverter circuit using switch elements.  |
|  |             | 10th | DC-AC conversion (2)                       | Understand the control method used for inverters.   |
|  |             | 11th | DC-AC conversion (3)                       | Understand various types of inverters, such as PWM inverters and three-phase inverters.   |
|  |             | 12th | Rectifier circuits (1)                     | Understand the basic circuit operation of a rectifier circuit.  |
|  |             | 13th | Rectifier circuits (2)                     | Understand the smoothing circuits used in rectifier circuits such as choke input type and capacitor input type smoothing circuits.                                    |
|  |             | 14th | Rectifier circuits (3)                     | Understand the operation of a rectifier circuit with output voltage control function.   |
|  |             | 15th | Examples of power electronics applications | Can introduce the application examples of power electronics equipment that have been discussed so far, and understand the importance of power electronics technology. |
|  |             | 16th | Final exam                                 |   |

#### Evaluation Method and Weight (%)

|                         | Examination | Exercise, Report | Mutual Evaluations between students | Efforts | Portfolio | Other | Total |
|-------------------------|-------------|------------------|-------------------------------------|---------|-----------|-------|-------|
| Subtotal                | 40          | 40               | 0                                   | 20      | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0                | 0                                   | 0       | 0         | 0     | 0     |
| Specialized Proficiency | 40          | 40               | 0                                   | 20      | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0                | 0                                   | 0       | 0         | 0     | 0     |

|   |  |                                       |  |   |   |
|---|--|---------------------------------------|--|---|---|
| Akashi College  |  | Year                                  | 2023   | Course Title  | Energy Transmission and Distribution Engineering  |
| Course Information  |  |                                       |  |   |   |
| Course Code   | 5517   |                                       | Course Category  | Specialized / Compulsory  |   |
| Class Format  | Lecture  |                                       | Credits  | School Credit: 1  |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade  | 5th   |   |
| Term  | Second Semester  |                                       | Classes per Week   | 2   |   |
| Textbook and/or Teaching Materials  | Not mandatory. For reference, Isao Iyoda, "Denryoku Hassei · Yusou Kougaku", Ohm-sha   |                                       |  |   |   |
| Instructor  | KONO Yoshiyuki   |                                       |  |   |   |
| Course Objectives   |  |                                       |  |   |   |
| 1) Understand the transmission, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy.<br>2) Understand the analysis methods required for power system control analysis.<br>3) Understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues.<br>4) Understand specific methods for building system controls. |  |                                       |  |   |   |
| Rubric  |  |                                       |  |   |   |
|   | Ideal Level  |                                       | Standard Level   |   | Unacceptable Level  |
| Achievement 1   | Can handle the transmission, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy in various situations.  |                                       | Understand the transmissions, substation, and distribution mechanisms, equipment, and control systems required for transmitting electrical energy.                                   |   | Do not understand the transmissions, substation and distribution mechanisms, equipment, and control systems required for the transmitting electrical energy.                                |
| Achievement 2   | Can handle the analysis methods required for control analysis of power system control and analysis in various situations.  |                                       | Understand the analysis methods required for power system control and analysis.  |   | Do not understand the analysis methods required for power system control and analysis.  |
| Achievement 3   | Can handle the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues in various situation.  |                                       | Understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues. |   | Do not understand the ways the electric power system should be in response to changes in the social landscape, such as power liberalization / deregulation and global environmental issues. |
| Achievement 4   | Can handle specific methods for building system controls in various situations.  |                                       | Understand the specific methods for building system controls.  |   | Do not understand concrete methods for building system controls.  |
| Assigned Department Objectives  |  |                                       |  |   |   |
| Teaching Method   |  |                                       |  |   |   |
| Outline   | This course will be held in a lecture style, and taught by a teacher who was engaged in power system analysis, development of operation and planning support systems, and research and development of power devices for power electronics applications (HVDC and FACTS) at Mitsubishi Electric Corporation's electrical system engineering department, leveraging this experience.<br>The aim of the course is to gain knowledge about the structure of the electrical energy supply system and its components, which play a major role in the energy supply system. In addition, students will learn various control methods and control theories related to the stable operation of supply systems. Furthermore, classes will help students recognize and understand the recent issues of power liberalization (such as electricity trading), deregulation (such as microgrids) and global environmental issues. |                                       |  |   |   |
| Style   | The classes will mostly consist of lectures with handouts. There will also be exercises and homework to help students understand. In addition, the class will go on a factory tour for weeks 5 and 6 or remote virtual tour to help deepen their understanding of actual machines. Hosokawa is the liaison.  |                                       |  |   |   |
| Notice  | A textbook will be used to aid students' understanding, but is not mandatory to buy.<br>The real factory tour for weeks 5 and 6 will take place at consecutive times by changing the timetable. In case of virtual remote factory tour, it will be included in ordinal class schedule.<br>Students who miss 1/3 or more of classes will not be eligible for a grade evaluation.  |                                       |  |   |   |
| Characteristics of Class / Division in Learning   |  |                                       |  |   |   |
| <input type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |  | <input checked="" type="checkbox"/> Applicable to Remote Class  | <input checked="" type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan   |  |                                       |  |   |   |
|   |  |                                       | Theme  | Goals   |   |
| 2nd Semester  | 3rd Quarter  | 1st                                   | Evolution of the electric business and the power system  | Have studied the evolution of the electric business and understand the overview of the configuration and operation control of the electric power system that made it a reality. Furthermore, are aware of the situation regarding the liberalization of electric power. |   |
|   |  | 2nd                                   | Transmission power (1)   | Have studied transmission methods and voltage, as well as track constants and transmission characteristics. Also, understand the recent energy supply methods, such as microgrids, as hot topics.   |   |
|   |  | 3rd                                   | Transmission power (2)   | Same as above   |   |

|  |             |      |  |  |
|--|-------------|------|--|--|
|  |             | 4th  | Substations (1)                                | Understand the roles and components of substations and switchboxes, which are important components of the power system.  |
|  |             | 5th  | Substations (2)                                | Same as above  |
|  |             | 6th  | Equipment manufacturing factory                | Visite a power equipment manufacturing factory online or actually to deepen their understanding of the actual machine.   |
|  |             | 7th  | Power distribution                             | Understand the voltage of the electrical distribution system and the electrical distribution equipment. Furthermore, understand the types of power in demand and the quality of electricity.                               |
|  |             | 8th  | Unit method, protection of the power system    | Have mastered the unit method, which is one of the element technologies for the analysis and calculation of power systems. Have mastered the protection and emergency control of the power system.                         |
|  | 4th Quarter | 9th  | Operation and control of the power system      | Understand the supply and demand control of power systems (such as supply and demand planning and economic load distribution), and have mastered the frequency and voltage control systems.                                |
|  |             | 10th | Symmetric coordinates and failure calculations | Understand the failure calculation (symmetric coordinate system), which is one of the analytical calculations of the power system. Are more proficient in fault calculation through learning specific cases and exercises. |
|  |             | 11th | Stability of the power system (1)              | Understand the static and dynamic and transient stability of the power system.   |
|  |             | 12th | Stability of the power system (2)              | Understand the synchronism stability of the power system.  |
|  |             | 13th | Stability of the power system (3)              | Understand the voltage and frequency stability of the power system.  |
|  |             | 14th | Power Systems and the Environment              | Have deepened their understanding on the classification of environmental problems in electric power systems, environmental problems caused by electromagnetic fields, and the global environment.                          |
|  |             | 15th | Next generation of power systems               | Understand the challenges and countermeasures of the next generation electric power system (smart grid), which should respond to the increase in electric vehicles and new energy.   |
|  |             | 16th | Final exam                                     | Understand the content from weeks 1 to 15.   |

#### Evaluation Method and Weight (%)

|                         | Examination | Report | Exercise | Total |
|-------------------------|-------------|--------|----------|-------|
| Subtotal                | 40          | 30     | 30       | 100   |
| Basic Proficiency       | 0           | 0      | 0        | 0     |
| Specialized Proficiency | 40          | 30     | 30       | 100   |
| Cross Area Proficiency  | 0           | 0      | 0        | 0     |



|  |   |  |  |  |   |                                  |
|--|---|--|--|--|---|----------------------------------|
| Akashi College   |   | Year   | 2023   |  | Course Title  | Engineering of Energy Conversion |
| Course Information   |   |  |  |  |   |                                  |
| Course Code  | 5518  |  |  | Course Category  | Specialized / Compulsory  |                                  |
| Class Format   | Lecture   |  |  | Credits  | School Credit: 1  |                                  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |  |  | Student Grade  | 5th   |                                  |
| Term   | First Semester  |  |  | Classes per Week   | 2   |                                  |
| Textbook and/or Teaching Materials   |   |  |  |  |   |                                  |
| Instructor   | HIROTA Atsushi  |  |  |  |   |                                  |
| Course Objectives  |   |  |  |  |   |                                  |
| The aim of this course is to develop the following capacities.<br>1. The ability to understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and consider them.<br>2. The ability to understand the basic mechanisms and equipment of various power generation methods and substations, and explain them to others.<br>3. The ability to understand new methods of power generation and power storage in addition to existing methods of power generation, recognize the effects of technology on nature and society, and explain them to others.<br>4. The ability to think of the optimal combination as a power supply systems based on a thorough understanding of the above topics. |   |  |  |  |   |                                  |
| Rubric   |   |  |  |  |   |                                  |
|  |   | Ideal Level  | Standard Level   |  | Unacceptable Level  |                                  |
| Achievement 1  |   | Fully understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and can fully consider them.                                | Understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and can consider them.  |  | Do not understand the positioning of electrical energy in particular among various energies, and its relationship with nature, society and the environment, and cannot consider them.             |                                  |
| Achievement 2  |   | Understand the basic mechanisms and equipment of various power generation methods and substations, and can accurately explain them to others .   | Understand the basic mechanisms and equipment of various power generation methods and substations, and can explain them to others.   |  | Do not understand the basic mechanisms and equipment of various power generation methods and substations.   |                                  |
| Achievement 3  |   | Understand new power generation methods and power storage, in addition to existing power generation methods, and recognize the effects of technology on nature and society, and can accurately explain them to others. | Understand new power generation methods and methods for power storage, in addition to the existing power generation methods, and recognize the effects of technology on nature and society , and can explain them to others. |  | Do not understand new power generation methods and methods for power storage, in addition to the existing power generation methods, or recognize the effects of technology on nature and society. |                                  |
|  |   | Thoroughly understand evaluation items 1 to 3, and can think specifically of the optimal combination as a power supply systems.  | Thoroughly understand evaluation items 1 to 3, and can think of the optimal combination as a power supply systems.   |  | Do not thoroughly understand the evaluation items 1 to 3, and cannot think of the optimal combination as a power supply system.   |                                  |
| Assigned Department Objectives   |   |  |  |  |   |                                  |
| Teaching Method  |   |  |  |  |   |                                  |
| Outline  | The course will cover the basic issues of power generation systems and equipment, such as hydroelectric, thermal, and nuclear power. Furthermore, students will also understand clean new power generation technologies and systems such as solar energy, wind power, and fuel cells. |  |  |  |   |                                  |
| Style  | Classes will be conducted in a lecture style, in line with the textbook.<br>Liaison: Nakai Yuichi   |  |  |  |   |                                  |
| Notice   | In order to understand this course, it's important to review the basics of physics and chemistry. This is also an important course for acquiring an electrician license.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.                             |  |  |  |   |                                  |
| Characteristics of Class / Division in Learning  |   |  |  |  |   |                                  |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |                                  |
| Course Plan  |   |  |  |  |   |                                  |
|  |   |  | Theme  | Goals  |   |                                  |
| 1st Semester   | 1st Quarter   | 1st  | An overview of electrical energy and energy conversion engineering   | Can explain the position of electrical energy in modern society, its relationship with environmental problems, and the conversion of various types of energy into electrical energy. |   |                                  |
|  |   | 2nd  | Overview of hydroelectric power generation   | Can explain the power generation methods and hydrodynamics of hydroelectric power plants, and the basics of hydroelectric power plants.  |   |                                  |
|  |   | 3rd  | Hydropower facilities, pumping power   | Understand the various main hydroelectric plants and their functions, and can explain an outline of the hydroelectric power plant.   |   |                                  |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 4th  | Waterwheel and attached equipment, turbine generators and electrical equipment | Systematically understand the types of water vehicles, their characteristics, and their mechanisms to generate electricity. Can compare and explain the characteristics of various types of water vehicles in terms of efficiency and specific speed. Can also explain the mechanisms and functions of speed regulators and excitation devices. |
|  |             | 5th  | Overview of thermal power generation   | Understand the thermodynamics necessary to understand the mechanisms of thermal and nuclear power generation, and can explain the mechanisms of steam power generation among thermal power generation.  |
|  |             | 6th  | Steam power generation   | Can explain the functions and structure of steam turbines, generators, water pumps, condensers, and boilers, which are the main facilities of the Guangzhou Automobile Power Plant.   |
|  |             | 7th  | Gas turbine power generation and combined cycle power generation               | Understand the mechanisms of gas turbine power generation and combined cycle power generation among thermal power plants, and can explain environmental measures at thermal power plants.   |
|  |             | 8th  | Review   | Understand the contents of the first half through exams or exercises  |
|  | 2nd Quarter | 9th  | Overview of nuclear power generation   | Can explain the system of reactors and the components of commercial power reactors (pressurized water reactors, boiling water reactors).  |
|  |             | 10th | Basics of nuclear reactions  | Can explain the energy of nuclear and fission reactions, which are the basis of nuclear power generation.   |
|  |             | 11th | Safety design and nuclear fuel cycle for nuclear power generation              | Can explain the safety design of light-water reactors and outline the nuclear fuel cycle.   |
|  |             | 12th | Solar energy generation  | Can explain the principles, features, and challenges of solar and solar thermal power generation systems as a representative renewable energy.  |
|  |             | 13th | Wind power   | Can explain the principles, characteristics, and challenges of wind power generation.   |
|  |             | 14th | Fuel cell power generation   | Can explain the principles, types, features, and issues of fuel cells.  |
|  |             | 15th | Power storage  | Can explain the technologies involved in power storage using secondary batteries and superconductivity.   |
|  |             | 16th | Final exam   |   |

#### Evaluation Method and Weight (%)

|                         | Examination | Exercise, Report | Mutual Evaluations between students | Efforts | Portfolio | Total |
|-------------------------|-------------|------------------|-------------------------------------|---------|-----------|-------|
| Subtotal                | 40          | 40               | 0                                   | 20      | 0         | 100   |
| Basic Proficiency       | 0           | 0                | 0                                   | 0       | 0         | 0     |
| Specialized Proficiency | 40          | 40               | 0                                   | 20      | 0         | 100   |
| Cross Area Proficiency  | 0           | 0                | 0                                   | 0       | 0         | 0     |

|   |             |  |  |  |   |  |  |
|---|-------------|--|--|--|---|--|--|
| Akashi College  |             | Year   | 2023   |  | Course Title  | Experiments of Electrical Engineering II   |  |
| Course Information  |             |  |  |  |   |  |  |
| Course Code   |             | 5519   |  | Course Category  |   | Specialized / Compulsory   |  |
| Class Format  |             | Experiment   |  | Credits  |   | School Credit: 2   |  |
| Department  |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade  |   | 5th  |  |
| Term  |             | First Semester   |  | Classes per Week   |   | 4  |  |
| Textbook and/or Teaching Materials  |             |  |  |  |   |  |  |
| Instructor  |             | ENOMOTO Ryuji  |  |  |   |  |  |
| Course Objectives   |             |  |  |  |   |  |  |
| (1) Can measure and verify the characteristics of a transistor.<br>(2) Can examine the behavior of an amplifier circuit using a transistor.<br>(3) Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor, and present them.<br>(4) Can work in a group. |             |  |  |  |   |  |  |
| Rubric  |             |  |  |  |   |  |  |
|   |             | Ideal Level  |  | Standard Level   |   | Unacceptable Level   |  |
| Achievement 1   |             | Can measure the characteristics of a transistor and examine the results.   |  | Can measure the characteristics of a transistor.   |   | Cannot measure the characteristics of a transistor.  |  |
| Achievement 2   |             | Can examine the results of an experiment on the behavior of an op amp in addition to an amplifier circuit using a transistor, and propose and design circuits, etc. utilizing these characteristics.   |  | Can examine the results of an experiment on the behavior of an amplifier circuit using a transistor.           |   | Do not know the behavior and basic characteristics of an amplifier circuit using a transistor. |  |
| Achievement 3   |             | Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor, and can present them in an easy-to-understand way.  |  | Can determine the specifications of a system that satisfies the conditions given by the experiment supervisor. |   | Cannot determine the specifications of a system that satisfies the conditions given.           |  |
| Achievement 4   |             | Can work in a group by cooperating and sharing roles to solve the issues assigned.   |  | Can work in a group on the issues assigned.  |   | Cannot work in a group.  |  |
| Assigned Department Objectives  |             |  |  |  |   |  |  |
| Teaching Method   |             |  |  |  |   |  |  |
| Outline   |             | In this course, students will design and implement systems using the knowledge and techniques of electrical and electronic engineering that they acquired previously. The aim of this class is to foster engineers with respect for others and high cooperativeness and leadership by conducting experiments in groups. It also aims at acquiring presentation skills and written expressions necessary for scientific reports through presentations and reports.          |  |  |   |  |  |
| Style   |             | Students will design and implement systems in PBL format, focusing on amplifier circuits using transistors. They will work in groups of four to five, and give presentations and submit reports as appropriate. Each group should voluntarily think and prepare/pre-study for the group work.  |  |  |   |  |  |
| Notice  |             | Students will not receive a passing grade unless they give all specified presentations and submit reports by the due date. Precautions regarding the experiments will be given during the first week. The content of subjects already taken may be needed, so do review. Students must pay attention to everything from taking roll-call to cleaning the lab and putting away the equipment. Students who miss 1/3 or more of classes will not be eligible for evaluation. |  |  |   |  |  |
| Characteristics of Class / Division in Learning   |             |  |  |  |   |  |  |
| <input checked="" type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class   |   | <input type="checkbox"/> Instructor Professionally Experienced                                 |  |
|   |             |  |  |  |   |  |  |
| Course Plan   |             |  |  |  |   |  |  |
|   |             |  | Theme  |  | Goals   |  |  |
| 1st Semester  | 1st Quarter | 1st  | Precautions during experiment and concept development                          |  | Understand the various precautions related to engineering experiments and the content and purpose of this experiment course. Can discuss the concept of the system to be developed. |  |  |
|   |             | 2nd  | Presentation of concept and development of specifications 1                    |  | Can present each team's concept. Can exchange opinions on the specifications of the system to be developed.   |  |  |
|   |             | 3rd  | Development of specifications 2  |  | Can agree on the specifications of the system as a group.   |  |  |
|   |             | 4th  | Development of specifications 3  |  | Can submit a plan on how to meet the specifications determined previously.  |  |  |
|   |             | 5th  | Selection and planning of elements and review of proposal for sharing of roles |  | Can select the parts necessary to achieve the specifications. Can summarize the sharing of roles and the future plans of the group.   |  |  |
|   |             | 6th  | Preparation for presentation   |  | Can prepare for the next week's report meeting  |  |  |

|                                  |                            |                    |   |  |
|----------------------------------|----------------------------|--------------------|---|--|
|                                  |                            | 7th                | Specification report meeting  | Can present the specifications decided, the methods to meet the specifications, and the sharing of roles as determined by each group.                  |
|                                  |                            | 8th                | Track progress  | Each team reviews progress and redesigns specifications and plans.   |
|                                  | 2nd Quarter                | 9th                | Measuring of the characteristics of the elements to be used and confirmation of how to use them | Determine the elements to be used, measure their characteristics, verify how to use them and examine whether they are suitable for the specifications. |
|                                  |                            | 10th               | System design and implementation 1  | Can determine exactly how to build the system as target.   |
|                                  |                            | 11th               | System design and implementation 2  | Can implement the system by the construction method determined by each group.  |
|                                  |                            | 12th               | System design and implementation 3  | Can complete the implementation of the system as determined by each group.   |
|                                  |                            | 13th               | System design and implementation 4  | Can evaluate the completed system and submit proposals for improvement   |
|                                  |                            | 14th               | System design and implementation 5  | Can execute the improvement proposals that have been submitted.  |
|                                  |                            | 15th               | Final presentation meeting  | Can demonstrate and present implemented systems.   |
|                                  |                            | 16th               | No final exam   | Submit reports instead   |
| Evaluation Method and Weight (%) |                            |                    |   |  |
|                                  | Specification Presentation | Final Presentation | Report  | Total  |
| Subtotal                         | 30                         | 35                 | 35  | 100  |
| Basic Proficiency                | 0                          | 0                  | 0   | 0  |
| Specialized Proficiency          | 30                         | 35                 | 35  | 100  |
| Cross Area Proficiency           | 0                          | 0                  | 0   | 0  |

|  |  |   |   |  |                            |
|--|--|---|---|--|----------------------------|
| Akashi College   |  | Year  | 2023  | Course Title   | Probability and Statistics |
| Course Information   |  |   |   |  |                            |
| Course Code  | 5520   |   | Course Category   | Specialized / Elective   |                            |
| Class Format   | Lecture  |   | Credits   | Academic Credit: 2   |                            |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade   | 5th  |                            |
| Term   | First Semester   |   | Classes per Week  | 2  |                            |
| Textbook and/or Teaching Materials   |  |   |   |  |                            |
| Instructor   | HAMADA Yukihiro  |   |   |  |                            |
| Course Objectives  |  |   |   |  |                            |
| [1] Can organize 1- and 2-dimensional data.<br>[2] Understand the concept of probability and can calculate the probability of an event.<br>[3] Understand the concept of probability distribution and can calculate the amount of samples.<br>[4] Understand the concepts of statistics and can calculate basic statistics.<br>[5] Can make statistical estimates.<br>[6] Can perform statistical tests. |  |   |   |  |                            |
| Rubric   |  |   |   |  |                            |
|  |  | Ideal Level   | Standard Level  | Unacceptable Level   |                            |
| Achievement 1  |  | Can correctly calculate mean, variance, covariance, and correlation coefficient and create a histogram.                                 | Can calculate mean, variance, covariance, and correlation coefficient and create a histogram.                         | Cannot calculate mean, variance, covariance, and correlation coefficient and create a histogram.                                   |                            |
| Achievement 2  |  | Can correctly calculate the probability and conditional probability of an event, and determine the independence of the event correctly. | Can calculate the probability and conditional probability of an event, and determine the independence of the event.   | Cannot calculate the probability and conditional probability of an event, and determine the independence of the event.             |                            |
| Achievement 3  |  | Can correctly calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution.         | Can calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution. | Cannot calculate the probability of an event under binomial distribution, Poisson distribution, and normal distribution.           |                            |
| Achievement 4  |  | Understand samples and populations and can correctly calculate sample mean, sample variance, and unbiased variance.                     | Understand samples and populations and can calculate sample mean, sample variance, and unbiased variance.             | Do not understand samples and populations and cannot calculate sample mean, sample variance, and unbiased variance.                |                            |
| Achievement 5  |  | Can accurately make point estimation and interval estimation.   | Can make point estimation and interval estimation.  | Cannot make point estimation and interval estimation.  |                            |
| Achievement 6  |  | Can accurately test the population mean and the population variance.  | Can test the population mean and the population variance.   | Cannot test the population mean and the population variance.   |                            |
| Assigned Department Objectives   |  |   |   |  |                            |
| Teaching Method  |  |   |   |  |                            |
| Outline  | The purpose of the probabilities and statistics is to identify the pattern from various coincidence that occurs around us, explain what happened based on the pattern, and estimate the whole from the part. In this course, students will learn the basics of probability theory and statistics.  |   |   |  |                            |
| Style  | Each week, the class will alternate between explanation and exercise about the content you will learn for the week.  |   |   |  |                            |
| Notice   | This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for review and completing assignment reports. There will be two assignments, and both of them must be submitted by the due date. One of the assignments involves programming in C. Students should have a prior knowledge of linear algebra and calculus. Try to solve the questions or exercise problems yourself and score it against the answer. Students who miss 1/3 or more of classes will not be eligible for evaluation. |   |   |  |                            |
| Characteristics of Class / Division in Learning  |  |   |   |  |                            |
| <input type="checkbox"/> Active Learning   |  | <input checked="" type="checkbox"/> Aided by ICT  | <input checked="" type="checkbox"/> Applicable to Remote Class  | <input type="checkbox"/> Instructor Professionally Experienced   |                            |
|  |  |   |   |  |                            |
| Course Plan  |  |   |   |  |                            |
|  |  |   | Theme   | Goals  |                            |
| 1st Semester   | 1st Quarter  | 1st   | Course guidance and 1-dimensional data 1/2  | Understand the objectives and grading method of the course. Can create a frequency distribution table and a histogram of the data. |                            |
|  |  | 2nd   | 1-dimensional data 2 of 2   | Can calculate mean, median, mode, variance, and standard deviation of the data.  |                            |
|  |  | 3rd   | 2-dimensional data  | Can calculate the correlation coefficient and regression line of 2-dimensional data.   |                            |
|  |  | 4th   | Discrete probability  | Can explain the meaning and nature of trials, events, and probability.   |                            |
|  |  | 5th   | Conditional probability and Bayes' theorem  | Can calculate conditional probability and determine whether two events are independent. Also, can explain Bayes' theorem.          |                            |

|  |                |      |  |   |
|--|----------------|------|--|---|
|  |                | 6th  | Probability variables and distribution           | Can explain discrete probability variables and discrete probability distributions. Also, can explain the sequential probability variables and the probability density function. |
|  |                | 7th  | Mean and variance of probability variables       | Can calculate mean and variance of probability variables.   |
|  |                | 8th  | Midterm examination<br>It is given during class. |   |
|  | 2nd<br>Quarter | 9th  | Binomial distribution and Poisson distribution   | Can explain the binomial distribution and Poisson distribution and can calculate their means and distributions.   |
|  |                | 10th | Normal distribution                              | Can explain and use normal distribution. Also, can explain the relationship between binomial distribution and normal distribution.  |
|  |                | 11th | Sample distribution                              | Can explain population, sample, sample mean, sample variance, unbiased-variance, the law of large numbers, and central limit theorem.   |
|  |                | 12th | Central limit theorem                            | Can explain normal population and central limit theorem.  |
|  |                | 13th | Various probability distributions                | Can explain the chi-squared distribution and t-distribution.  |
|  |                | 14th | Estimation and test 1 of 2                       | Can perform interval estimation of population mean when the population variance is known and unknown. Also, can explain what we claim by statistical tests.                     |
|  |                | 15th | Test 2 of 2                                      | Can perform two-tailed and one-tailed tests for the population mean when the population variance is known and unknown.  |
|  |                | 16th | Final examination                                |   |

#### Evaluation Method and Weight (%)

|                            | Examination | Task | Mutual<br>Evaluations<br>between<br>students | Behavior | Portfolio | Other | Total |
|----------------------------|-------------|------|--|----------|-----------|-------|-------|
| Subtotal                   | 80          | 20   | 0  | 0        | 0         | 0     | 100   |
| Basic<br>Proficiency       | 0           | 0    | 0  | 0        | 0         | 0     | 0     |
| Specialized<br>Proficiency | 80          | 20   | 0  | 0        | 0         | 0     | 100   |
| Cross Area<br>Proficiency  | 0           | 0    | 0  | 0        | 0         | 0     | 0     |

|  |   |                                       |   |  |   |
|--|---|---------------------------------------|---|--|---|
| Akashi College   |   | Year                                  | 2023  | Course Title   | Information Theory  |
| Course Information   |   |                                       |   |  |   |
| Course Code  | 5521  |                                       | Course Category   | Specialized / Elective   |   |
| Class Format   | Lecture   |                                       | Credits   | School Credit: 1   |   |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade   | 5th  |   |
| Term   | First Semester  |                                       | Classes per Week  | 2  |   |
| Textbook and/or Teaching Materials   |   |                                       |   |  |   |
| Instructor   | NAKAI Yuichi  |                                       |   |  |   |
| Course Objectives  |   |                                       |   |  |   |
| (1) Understand how the amount of information is defined and how its validity is guaranteed.<br>(2) Understand the definition of various sources of information and the meaning of entropy in each source, and can derive it.<br>(3) Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits.<br>(4) Understand Shannon's first theorem and its significance.<br>(5) What is a communication channel and their types. In addition, understand how they can be expressed.<br>(6) Understand the significance of Shannon's second theorem. |   |                                       |   |  |   |
| Rubric   |   |                                       |   |  |   |
|  | Ideal Level   |                                       | Standard Level  |  | Unacceptable Level  |
| Achievement 1  | Can accurately explain how the amount of information is defined and how its validity is guaranteed.   |                                       | Can explain how the amount of information is defined and how its validity is guaranteed.  |  | Cannot explain how the amount of information is defined and how its validity is guaranteed.                               |
| Achievement 2  | Understand the definition of various sources of information and the meaning of entropy in each source, and hence can derive it accurately.  |                                       | Understand the definition of various sources of information and the meaning of entropy in each source, and hence can derive it.   |  | Do not understand the definition of various sources of information and the meaning of entropy in each source.             |
| Achievement 3  | Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits accurately.  |                                       | Understand the types of coding and the conditions that coding should meet, and can derive the average code length and its limits. |  | Do not understand the types of coding and the conditions that coding should meet, the average code length and its limits. |
| Achievement 4  | Can accurately explain Shannon's first theorem and its significance.  |                                       | Can explain Shannon's first theorem and its significance.   |  | Cannot explain Shannon's first theorem and its significance.  |
| Achievement 5  | Can specifically explain what is a communication channel and their types, and how they can be expressed.  |                                       | Can explain what is a communication channel and their types, and how they can be expressed.                                       |  | Cannot explain what is a communication channel and their types, and how they can be expressed.                            |
| Achievement 6  | Can accurately explain the significance of Shannon's second theorem.  |                                       | Can explain the significance of Shannon's second theorem.   |  | Cannot explain the significance of Shannon's second theorem.  |
| Assigned Department Objectives   |   |                                       |   |  |   |
| Teaching Method  |   |                                       |   |  |   |
| Outline  | The outcome of information theory, which is founded by C.E. Shannon, are indispensable in modern life. In this lecture, we will explain the knowledge necessary to achieve "speedy" and "accurate" information transmission in communication systems. The first half of the course begins with the quantification of information and continues on to the first theorem of Shannon. Shannon's second theorem will be taught in second half after discussing the definition of a communication channel. |                                       |   |  |   |
| Style  | Classes will be held in a lecture style using slides. Students will be given practice questions for assignments, so actively work on them in order to test their understanding.   |                                       |   |  |   |
| Notice   | Classes will be given on the premises that students have the knowledge of probability and statistics, so understand these content well beforehand.<br>Students who miss 1/3 or more of classes will not be eligible for evaluation.   |                                       |   |  |   |
| Characteristics of Class / Division in Learning  |   |                                       |   |  |   |
| <input type="checkbox"/> Active Learning   |   | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan  |   |                                       |   |  |   |
|  |   |                                       | Theme   | Goals  |   |
| 1st Semester   | 1st Quarter   | 1st                                   | Model of a communication system   | Can explain the model of a communication system which is assumed in information theory and quantify information.   |   |
|  |   | 2nd                                   | Memoryless sources and entropy  | Can explain the simplest source of information, the memoryless source, and the entropy that provides clues to the internal structure of the source.            |   |
|  |   | 3rd                                   | Markov source and entropy   | Can explain the Markov source, which is close to real-world information sources, and derive its entropy.   |   |
|  |   | 4th                                   | What is coding  | Can define coding and explain some conditions that coding must meet. Can explain the definition of average coding length and its limit for instant decryption. |   |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 5th  | Shannon's source coding theorem            | Can explain Shannon's source coding theorem and its significance.   |
|  |             | 6th  | Huffman coding                             | Can construct the Huffman code as a coding scheme that can configure compact coding.                                    |
|  |             | 7th  | Communication channel                      | Can explain the definition of communication channels and how they are represented.                                      |
|  |             | 8th  | Midterm exam                               |   |
|  | 2nd Quarter | 9th  | Mutual information                         | Can explain what is mutual information, which is defined by the information transmitted over the communication channel. |
|  |             | 10th | Various communication channels             | Can explain noiseless, deterministic, and longitudinal, and degraded communication channels.                            |
|  |             | 11th | Communication channel capacity             | Can explain the definition of communication channel capacity derived from consideration of the mutual information.      |
|  |             | 12th | Improved communication channel reliability | Can explain how to improve reliability in the transmission of information over communication channels.                  |
|  |             | 13th | Error rates and rules for judging          | Can explain the rules for reducing the error rate in communication channels.  |
|  |             | 14th | Shannon's noisy-channel coding theorem     | Can explain Shannon's noisy-channel coding theorem for a binary symmetric channel.                                      |
|  |             | 15th | Channel coding                             | Can explain the basic concept of some channel coding schemes.   |
|  |             | 16th | Final exam                                 |   |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 100         | 0            | 0                                   | 0        | 0         | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |



|  |  |                                       |   |  |  |                                       |
|--|--|---------------------------------------|---|--|--|---------------------------------------|
| Akashi College   |  | Year                                  | 2023  |  | Course Title   | Fundamentals of Communication Systems |
| Course Information   |  |                                       |   |  |  |                                       |
| Course Code  | 5522   |                                       |   | Course Category  | Specialized / Elective   |                                       |
| Class Format   | Lecture  |                                       |   | Credits  | Academic Credit: 2   |                                       |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       |   | Student Grade  | 5th  |                                       |
| Term   | First Semester   |                                       |   | Classes per Week   | 2  |                                       |
| Textbook and/or Teaching Materials   |  |                                       |   |  |  |                                       |
| Instructor   |  |                                       |   |  |  |                                       |
| Course Objectives  |  |                                       |   |  |  |                                       |
| The goal is to achieve the following competencies:<br>1) Understand the mathematical preparation and basic signal processing theory necessary to understand communication systems and can analyze them.<br>2) Can design a simple signal processing system in a communication system.<br>3) Gain self-directed and continuous learning skills through the preparation of assignment reports. |  |                                       |   |  |  |                                       |
| Rubric   |  |                                       |   |  |  |                                       |
|  | Ideal Level  |                                       | Standard Level  |  | Unacceptable Level   |                                       |
| Achievement 1  | Correctly understand the mathematical preparation and basic signal processing theory necessary to understand communication systems and can analyze them.   |                                       | Understand the mathematical preparation and basic signal processing theory necessary to understand communication systems and can analyze them.  |  | Do not understand the mathematical preparation and basic signal processing theory necessary to understand communication systems. |                                       |
| Achievement 2  | Can correctly design a simple signal processing system in a communication system.  |                                       | Can design a simple signal processing system in a communication system.   |  | Cannot design a simple signal processing system in a communication system.   |                                       |
| Achievement 3  | Can correctly write up the required number of assignment reports.  |                                       | Can write up the required number of assignment reports.   |  | Cannot write up the required number of assignment reports.   |                                       |
| Assigned Department Objectives   |  |                                       |   |  |  |                                       |
| Teaching Method  |  |                                       |   |  |  |                                       |
| Outline  | In this course, we will explain the basics necessary to understand communication systems, and simple analogue communication systems. This course is paired with Communication Systems, which will be held in the second semester. Therefore, taking both this course and Communication Systems is recommended.       |                                       |   |  |  |                                       |
| Style  | This course will focus on the basics of communication systems and the analogue modulation and demodulation systems, and the material will be explained using a textbook. Self-study is important, so be sure to work through the pre-study review.<br>Liaison: Masato Omukai   |                                       |   |  |  |                                       |
| Notice   | This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. Students who miss 1/3 or more of classes will not be eligible for a passing grade. |                                       |   |  |  |                                       |
| Characteristics of Class / Division in Learning  |  |                                       |   |  |  |                                       |
| <input type="checkbox"/> Active Learning   |  | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class                                 | <input type="checkbox"/> Instructor Professionally Experienced   |                                       |
|  |  |                                       |   |  |  |                                       |
| Course Plan  |  |                                       |   |  |  |                                       |
|  |  |                                       | Theme   | Goals  |  |                                       |
| 1st Semester   | 1st Quarter  | 1st                                   | Introduction<br>The basic structure of the communication system and the positioning of this class will be carried out.<br>Discuss on essential mathematical fundamentals for learning communication systems such as Fourier transforms. | Can explain about communication systems. Can explain the role of modulation.                   |  |                                       |
|  |  | 2nd                                   | Digital and analogue signal processing<br>Discuss on the characteristics of digital signal processing versus analogue signal processing.  | Can explain about digital and analogue processing briefly.                                     |  |                                       |
|  |  | 3rd                                   | Signal Wave Analysis<br>Discuss on the representation of signal waves using Fourier series and Fourier transforms.  | Can express periodic and non-periodic signals using Fourier series and Fourier transforms.     |  |                                       |
|  |  | 4th                                   | Continuous and discrete time systems<br>Discuss on the relationship between a continuous-time system such as an electrical circuit and a discrete-time system that deals with digital signals.  | Can explain continuous and discrete time systems.  |  |                                       |
|  |  | 5th                                   | Linear time invariant system<br>Discuss on the basic properties of systems such as linearity and time invariants and convolution.   | Can explain the linearity, time invariant and convolution operations of discrete time systems. |  |                                       |
|  |  | 6th                                   | Frequency response of the system<br>Discuss on the frequency characteristics of the system and its effectiveness. Discuss on the method of frequency response using the transfer function.  | Can explain and derive the frequency characteristics of discrete time systems.                 |  |                                       |
|  |  | 7th                                   | Midterm exercise<br>Review the content learned so far through exercises to gain a better understanding.   | Can accomplish the challenges assigned.  |  |                                       |

|  |             |      |   |   |
|--|-------------|------|---|---|
|  | 2nd Quarter | 8th  | Midterm exam  | Score 60 or more marks.   |
|  |             | 9th  | Amplitude modulation systems (1)<br>Explain the role and significance of modulation.<br>Explain the amplitude modulation system.                              | Can explain the role of each modulation system.<br>Can explain amplitude modulation system briefly. |
|  |             | 10th | Amplitude modulation systems (2)<br>Explain amplitude modulation and its demodulation.  | Can explain the modulation and demodulation methods of amplitude modulation system.                 |
|  |             | 11th | Angle-modulation systems (1)<br>Explain phase modulation and frequency modulation briefly, and explain the bandwidth used for frequency modulation.           | Can explain the nature of phase modulation and frequency modulation.                                |
|  |             | 12th | Angle-modulation systems (2)<br>Explain frequency modulation and its demodulation.  | Can explain the modulation and demodulation methods of frequency modulation system.                 |
|  |             | 13th | Pulse modulation and pulse-code modulation<br>Explain the sampling theorem and the pulse-code modulation using the periodic pulse signal as the carrier wave. | Can explain the sampling theorem and pulse modulation.  |
|  |             | 14th | Fast Fourier transforms<br>Explain fast Fourier transforms that result in discrete frequency spectra in less computations.                                    | Can explain the fast Fourier transform and their relationship with discrete Fourier transforms.     |
|  |             | 15th | Final exercise<br>Review the content learned so far through exercises to gain a better understanding.   | Can complete the assignments given.   |
|  |             | 16th | Final exam  | Score 60 or more marks.   |

#### Evaluation Method and Weight (%)

|                         | Examination | Report | Total |
|-------------------------|-------------|--------|-------|
| Subtotal                | 70          | 30     | 100   |
| Basic Proficiency       | 0           | 0      | 0     |
| Specialized Proficiency | 70          | 30     | 100   |
| Cross Area Proficiency  | 0           | 0      | 0     |

|  |             |  |  |  |  |   |  |
|--|-------------|--|--|--|--|---|--|
| Akashi College   |             | Year   | 2023   |  | Course Title   | Communication System  |  |
| Course Information   |             |  |  |  |  |   |  |
| Course Code  |             | 5523   |  | Course Category  |  | Specialized / Elective  |  |
| Class Format   |             | Lecture  |  | Credits  |  | School Credit: 1  |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |  | Student Grade  |  | 5th   |  |
| Term   |             | Second Semester  |  | Classes per Week   |  | 2   |  |
| Textbook and/or Teaching Materials   |             |  |  |  |  |   |  |
| Instructor   |             |  |  |  |  |   |  |
| Course Objectives  |             |  |  |  |  |   |  |
| The goal is to achieve the following competencies:<br>1) Understand analogue and digital communication systems and their basic components.<br>2) Understand the principles and features of various digital modulation systems.<br>3) Understand the principles and features of multiplex communication systems and spread spectrum modulation. |             |  |  |  |  |   |  |
| Rubric   |             |  |  |  |  |   |  |
|  |             | Ideal Level  |  | Standard Level   |  | Unacceptable Level  |  |
| Achievement 1  |             | Can accurately explain analogue and digital communication systems and their basic components.  |  | Can explain analogue and digital communication systems and their basic components.                         |  | Cannot explain analogue and digital communication systems and their basic components.                         |  |
| Achievement 2  |             | Can accurately explain the principles and features of various digital modulation systems   |  | Can explain the principles and features of various digital modulation systems.                             |  | Cannot explain the principles and features of various digital modulation systems.                             |  |
| Achievement 3  |             | Can accurately explain multiplex communication systems, the principles and features of spread spectrum modulation.   |  | Can explain the principles and features of multiplex communication systems and spread spectrum modulation. |  | Cannot explain the principles and features of multiplex communication systems and spread spectrum modulation. |  |
| Assigned Department Objectives   |             |  |  |  |  |   |  |
| Teaching Method  |             |  |  |  |  |   |  |
| Outline  |             | In this lecture, we will discuss analogue and digital communication systems. The goal is to understand the basic theory for transmitting information using various modulation systems.   |  |  |  |   |  |
| Style  |             | In addition to analogue communications, the focus will be on the modulation and demodulation systems of digital communications, and the textbook will be used for explanation. As this subject calls for self-study, be sure to work through the ample pre-study and review. |  |  |  |   |  |
| Notice   |             | It is desirable to have attended the "Fundamentals of Communication Systems" class, which started in the previous semester (however, it is not the conditions for this course).<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade.        |  |  |  |   |  |
| Characteristics of Class / Division in Learning  |             |  |  |  |  |   |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |  | <input checked="" type="checkbox"/> Applicable to Remote Class   |  | <input type="checkbox"/> Instructor Professionally Experienced  |  |
|  |             |  |  |  |  |   |  |
| Course Plan  |             |  |  |  |  |   |  |
|  |             |  | Theme  |  | Goals  |   |  |
| 2nd Semester   | 3rd Quarter | 1st  | Introduction and review<br>Position the class and review the topics covered in Fundamentals of Communication Systems.                                  |  | Can provide an overview of what one learned in Fundamentals of Communication Systems.                                      |   |  |
|  |             | 2nd  | The basics of the stochastic process<br>Explain the stochastic process that plays an important role in the handling of noise in communication systems. |  | Can explain the basic concepts of the stochastic process.  |   |  |
|  |             | 3rd  | Noise characteristics of amplitude modulation<br>Explain the behavior of an amplitude modulation system when there is noise.                           |  | Can explain the signal power-to-noise ratio of demodulation signals by each amplitude modulation system                    |   |  |
|  |             | 4th  | Noise characteristics of frequency modulation<br>Explain the behavior of a frequency modulation system when there is noise.                            |  | Can explain the signal power-to-noise ratio of demodulation signals in a frequency modulation system.                      |   |  |
|  |             | 5th  | Baseband digital modulation<br>Explain digital modulation and give an explanation on one of them, baseband digital modulation.                         |  | Can explain the basics of baseband digital modulation.   |   |  |
|  |             | 6th  | Noise characteristics of digital modulation<br>Explain the characteristics of white Gaussian noise.  |  | Can explain signal errors due to noise.  |   |  |
|  |             | 7th  | Midterm exercise<br>Review the content learned so far through exercises to gain a better understanding.  |  | Can complete the assignments given.  |   |  |
|  |             | 8th  | Midterm exam   |  | Obtain 60 or higher points.  |   |  |
|  | 4th Quarter | 9th  | Passband Digital Modulation (1)<br>Explain signal space analysis and correlation receivers.  |  | Can analyze the characteristics of a communications system and explain how the correlation receiver determines the signal. |   |  |
|  |             | 10th   | Passband Digital Modulation (2)<br>Explain the two-way and multiple pulse amplitude modulation (PAM).  |  | Can explain PAM system.  |   |  |

|  |      |  |   |
|--|------|--|---|
|  | 11th | Passband Digital Modulation (3)<br>Explain Quadrature Amplitude Modulation (QAM).  | Can explain QAM system.                 |
|  | 12th | Phase Shift Keying (PSK) system<br>Explain the PSK system.   | Can explain PSK system.                 |
|  | 13th | "Orthogonal Frequency Division<br>Multiplexing (OFDM) system<br>Explain the OFDM system.                                   | Can explain OFDM system.                |
|  | 14th | Multiplex communication system<br>Explain frequency division multiplexing (FDM) and<br>time division multiplexing (TDM).   | Can explain multiplexing.               |
|  | 15th | Spread Spectrum Modulation<br>Explain the spread modulation system with direct<br>series modulation (DSM) using PN coding. | Can explain spread spectrum modulation. |
|  | 16th | Final exam   | Score 60 or more marks.                 |

#### Evaluation Method and Weight (%)

|                         | Examination | Report | Total |
|-------------------------|-------------|--------|-------|
| Subtotal                | 70          | 30     | 100   |
| Basic Proficiency       | 0           | 0      | 0     |
| Specialized Proficiency | 70          | 30     | 100   |
| Cross Area Proficiency  | 0           | 0      | 0     |

|  |  |  |   |   |  |   |
|--|--|--|---|---|--|---|
| Akashi College   |  | Year   | 2023  |   | Course Title                             | Information Network   |
| Course Information   |  |  |   |   |  |   |
| Course Code  | 5524   |  |   | Course Category   | Specialized / Elective                   |   |
| Class Format   | Lecture  |  |   | Credits   | School Credit: 1                         |   |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |  |   | Student Grade   | 5th                                      |   |
| Term   | First Semester   |  |   | Classes per Week  | 2  |   |
| Textbook and/or Teaching Materials   | 指定しない。   |  |   |   |  |   |
| Instructor   | INOUE Kazunari   |  |   |   |  |   |
| Course Objectives  |  |  |   |   |  |   |
| ネットワーク技術の基礎を理解することを全体目標とし、以下の能力の習得を個別目標とする。<br>1) ネットワークの歴史、TCP/IPプロトコル<br>2) LANを構成する技術<br>3) IPパケットとルーティング<br>4) TCPとUDPによる制御方式<br>5) ネットワークセキュリティと暗号化 |  |  |   |   |  |   |
| Rubric   |  |  |   |   |  |   |
|  | 理想的な到達レベルの目安   |  | 標準的な到達レベルの目安  |   | 未到達レベルの目安                                |   |
| 評価項目1  | ネットワークの歴史とTCP/IP通信プロトコルを十分に理解できる。  |  | ネットワークの歴史とTCP/IP通信プロトコルを理解できる。                                    |   | ネットワークの歴史とTCP/IP通信プロトコルを理解できない。          |   |
| 評価項目2  | LANを構築するトポロジと伝送方式を十分に理解できる。  |  | LANを構築するトポロジと伝送方式を理解できる。  |   | LANを構築するトポロジと伝送方式を理解できない。                |   |
| 評価項目3  | イーサネットフレームとフォーディング、IPパケットとルーティングを十分に理解できる。   |  | イーサネットフレームとフォーディング、IPパケットとルーティングを理解できる。                           |   | イーサネットフレームとフォーディング、IPパケットとルーティングを理解できない。 |   |
| 評価項目4  | UDP/TCPの制御方式、ポート番号とアプリケーションを十分に理解できる。  |  | UDP/TCPの制御方式、ポート番号とアプリケーションを理解できる。                                |   | UDP/TCPの制御方式、ポート番号とアプリケーションを理解できない。      |   |
| 評価項目5  | ネットワークに潜む脅威、セキュリティと暗号化技術を十分に理解できる。   |  | ネットワークに潜む脅威、セキュリティと暗号化技術を理解できる。                                   |   | ネットワークに潜む脅威、セキュリティと暗号化技術を理解できない。         |   |
| Assigned Department Objectives   |  |  |   |   |  |   |
| Teaching Method  |  |  |   |   |  |   |
| Outline  | 情報ネットワークの基礎を学習する。アナログ信号のデジタル化と伝送方式について学習する。LAN構築のためのトポロジ、およびOSI参照とTCP/IPを理解し、各種通信プロトコルを学習する。ネットワークセキュリティについて学習する。この科目では、ルータほかネットワーク機器開発の実務経験を有する教員が、講義形式と演習形式で授業を行う。 |  |   |   |  |   |
| Style  | LAN構築とインターネット、さらにセキュリティについて、ネットワーク技術の基礎を理解することを目標とし、第1週から第15週まで講義形式と演習形式で授業を行う。  |  |   |   |  |   |
| Notice   | 3年授業「情報工学概論」でのネットワークの知識を前提とする。<br>合格の対象としない欠席条件(割合) 1/3以上の欠課   |  |   |   |  |   |
| Characteristics of Class / Division in Learning  |  |  |   |   |  |   |
| <input type="checkbox"/> Active Learning   |  | <input checked="" type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class      |  | <input checked="" type="checkbox"/> Instructor Professionally Experienced |
|  |  |  |   |   |  |   |
| Course Plan  |  |  |   |   |  |   |
|  |  |  | Theme   | Goals   |  |   |
| 1st Semester   | 1st Quarter  | 1st  | ネットワークの歴史と通信方式の変遷について説明する。  | ネットワークの歴史と通信方式の変遷について理解できる。   |  |   |
|  |  | 2nd  | アナログ信号のデジタル化、符号化と複合化について説明する。デジタル伝送とシリアルインターフェース具体例について説明する。      | アナログ信号のデジタル化、符号化と複合化について理解できる。デジタル伝送とシリアルインターフェース具体例について理解できる。      |  |   |
|  |  | 3rd  | 回線交換方式からパケット交換方式への違い、インターネットを構成する技術について説明する。                      | 回線交換方式からパケット交換方式への違い、インターネットを構成する技術について説明する。                        |  |   |
|  |  | 4th  | OSI参照モデル、TCP/IPを構成する各層（レイヤ）の技術概要について説明する。                         | OSI参照モデル、TCP/IPを構成する各層（レイヤ）の技術概要について理解できる。                          |  |   |
|  |  | 5th  | 送信側と受信側でのカプセル化と非カプセル化、L2/L3/L4/L7処理の流れについて説明する。                   | 送信側と受信側でのカプセル化と非カプセル化、L2/L3/L4/L7処理の流れについて理解できる。                    |  |   |
|  |  | 6th  | バス型、スター型など各種ネットワークポロジについて説明する。<br>LANを構成する技術、スイッチ/ルータについて説明する。    | バス型、スター型など各種ネットワークポロジについて理解できる。<br>LANを構成する技術、スイッチ/ルータについて理解できる。    |  |   |
|  |  | 7th  | イーサネットフレームフォーマット、ヘッダー、ペイロード、トレーラの役割とMACアドレスについて説明する。              | イーサネットフレームフォーマット、ヘッダー、ペイロード、トレーラの役割とMACアドレスについて理解できる。               |  |   |
|  |  | 8th  | 中間試験  | 中間試験  |  |   |
|  | 2nd Quarter  | 9th  | IPパケットフォーマット、アドレスの設定方法、クラスフルアドレスについて説明する。ルーティングテーブルと経路制御について説明する。 | IPパケットフォーマット、アドレスの設定方法、クラスフルアドレスについて理解できる。ルーティングテーブルと経路制御について理解できる。 |  |   |
|  |  | 10th   | IPアドレス、クラスフル/クラスレスの定義とネットワーク/ホスト数の計算について説明する。                     | IPアドレス、クラスフル/クラスレスの定義とネットワーク/ホスト数の計算について理解できる。                      |  |   |

|  |  |      |   |   |
|--|--|------|---|---|
|  |  | 11th | DHCPサーバー機能について説明する。IPを助ける技術ICMPエコー要求・応答について説明する。L2/L3間のARPIについて説明する。    | DHCPサーバー機能について理解できる。IPを助ける技術ICMPエコー要求・応答について理解できる。L2/L3間のARPIについて理解できる。   |
|  |  | 12th | コネクションレス型・コネクションレス型プロトコルについて説明する。ポート番号とL7への受け渡しについて説明する。                | コネクションレス型・コネクションレス型プロトコルについて理解できる。ポート番号とL7への受け渡しについて理解できる。                |
|  |  | 13th | DNS、Web.サーバーとHTTPなどインターネット利用におけるサービスとプロトコルについて説明する。                     | DNS、Web.サーバーとHTTPなどインターネット利用におけるサービスとプロトコルについて理解できる。                      |
|  |  | 14th | ネットワークに潜む脅威と情報を取り扱う上での倫理、ネットワークセキュリティと暗号化技術について説明する。                    | ネットワークに潜む脅威と情報を取り扱う上での倫理、ネットワークセキュリティと暗号化技術について理解できる。                     |
|  |  | 15th | 移動体通信とアクセスネットワークについて説明する。<br>IoT（Internet of Things）と非IPネットワークについて説明する。 | 移動体通信とアクセスネットワークについて理解できる。<br>IoT（Internet of Things）と非IPネットワークについて理解できる。 |
|  |  | 16th | 期末試験  | 期末試験  |

| Evaluation Method and Weight (%) |    |      |       |
|----------------------------------|----|------|-------|
|                                  | 試験 | 演習課題 | Total |
| Subtotal                         | 80 | 20   | 100   |
| 基礎的能力                            | 0  | 0    | 0     |
| 専門的能力                            | 80 | 20   | 100   |
| 分野横断的能力                          | 0  | 0    | 0     |

|   |   |                                       |   |   |   |
|---|---|---------------------------------------|---|---|---|
| Akashi College  |   | Year                                  | 2023  | Course Title  | Control Engineering II  |
| Course Information  |   |                                       |   |   |   |
| Course Code   | 5525  |                                       | Course Category   | Specialized / Elective  |   |
| Class Format  | Lecture   |                                       | Credits   | School Credit: 1  |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course  |                                       | Student Grade   | 5th   |   |
| Term  | First Semester  |                                       | Classes per Week  | 2   |   |
| Textbook and/or Teaching Materials  |   |                                       |   |   |   |
| Instructor  | ENOMOTO Ryuji   |                                       |   |   |   |
| Course Objectives   |   |                                       |   |   |   |
| <p>The objectives of this course are as follows:</p> <ol style="list-style-type: none"> <li>1. Can derive the transient response of a system by using the inverse Laplace transform.</li> <li>2. Can draw a polygonal line approximation of a Bode plot drawing from a transfer function. Conversely, can derive a transfer function from the polygonal line approximation of a Bode plot.</li> <li>3. Can determine stability criteria of open-loop systems by using the Routh and Hurwitz stability criterion methods.</li> <li>4. Can find a stability margin.</li> <li>5. Can design PID control systems</li> <li>6. Can derive the discrete time model of a system.</li> </ol> |   |                                       |   |   |   |
| Rubric  |   |                                       |   |   |   |
|   | Ideal Level   |                                       | Standard Level  |   | Unacceptable Level  |
| Achievement 1   | Can derive the transient response of a system by using the inverse Laplace transform.   |                                       | Know that the transient response of a basic system can be derived by using the inverse Laplace transform after performing the formula deformation such as partial fraction decomposition and square completion. |   | Cannot calculate the inverse Laplace transform.   |
| Achievement 2   | Can both draw a polygonal line approximation of a Bode plot from a transfer function, and derive a transfer function from a polygonal line approximation of a Bode plot.  |                                       | Can either draw a polygonal line approximation of a Bode plot from a transfer function, or derive a transfer function from a polygonal line approximation of a Bode plot.                                       |   | Can neither draw a polygonal line approximation of a Bode plot from a transfer function, or derive a transfer function from a polygonal line approximation of a Bode plot |
| Achievement 3   | Can determine the stability of an open loop system using both the Routh and Hurwitz stability criterion methods.  |                                       | Can determine the stability of an open loop system using either the Routh or Hurwitz stability criterion methods.   |   | Do not know the Routh nor the Hurwitz stability criterion method.   |
| Achievement 4   | Can find a stability margin or to indicate the applicable location in the frequency response.   |                                       | Can explain the definition of a stability margin.   |   | Cannot find a stability margin.   |
| Achievement 5   | Can design PID control systems with both the step response method and limit sensitivity method.   |                                       | Can design PID control systems with either the step response method or the limit sensitivity method.  |   | Cannot design PID control system  |
| Achievement 6   | Can derive the discrete time model of a system both using the solution of a differential equation and a differential approximation.   |                                       | Can derive a discrete time model of a system using a solution of a differential equation or a differential approximation.   |   | Cannot derive the discrete time model of a system.  |
| Assigned Department Objectives  |   |                                       |   |   |   |
| Teaching Method   |   |                                       |   |   |   |
| Outline   | While we are not very aware of in our daily lives, almost every device, including cars, air conditioners, and refrigerators, have a automatic control function. In this course, students will learn the basics of classical controls following Control Engineering I, such as the Routh and Hurwitz stability criterion methods and the design method of PID control systems, and also learn how to simulate the response of control systems by themselves. |                                       |   |   |   |
| Style   | They will learn how to determine the transient response of a system, and about stability margins and PID control designs. In addition, as an overall summary of the previous study on control engineering, we will explain and demonstrate how to verify the response of a control system based on a simulation. In almost every class, after the content of the lesson is explained, there will be exercises to review the content.                        |                                       |   |   |   |
| Notice  | Students can expect a large amount of calculations to do in assignments and periodic exams. Therefore, they should actually think and solve exercise problems assigned as appropriate themselves, to get used to doing calculations. Also, because there will be many assignments and exercises, make efforts to finish them quickly. Students who miss 1/3 or more of classes will not be eligible for a passing grade.                                    |                                       |   |   |   |
| Characteristics of Class / Division in Learning   |   |                                       |   |   |   |
| <input type="checkbox"/> Active Learning  |   | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class                          | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan   |   |                                       |   |   |   |
|   |   |                                       | Theme   | Goals   |   |
| 1st Semester  | 1st Quarter   | 1st                                   | Introduction  | Understand the outline of this course and know the content of the study and objectives. |   |

|  |             |      |  |   |
|--|-------------|------|--|---|
|  |             | 2nd  | Laplace transform and inverse transform                    | Can describe the expression of the Laplace transform.<br>Can calculate the inverse Laplace transform based on partial fraction decomposition or completing the square.                        |
|  |             | 3rd  | Calculation of transient response                          | Can derive step responses, impulse responses, etc. using the inverse Laplace transform.<br>Understand the meaning of convolute integrals, and can describe their expressions.                 |
|  |             | 4th  | Polygonal line approximation of a Bode plot 1              | Can draw a Bode plot (gain plot) line for a system with a transfer function consisting of the product of the primary element.   |
|  |             | 5th  | Polygonal line approximation of a Bode plot 1              | Can determine a transfer function from the polygonal line approximation of a Bode plot (gain plot) for a system with a transfer function composed of the product of the primary element.      |
|  |             | 6th  | Stability margins  | Can explain a stability margin.<br>Can explain where a stability margin is indicated in the frequency response.   |
|  |             | 7th  | Review   | Review the content of classes in the first half of the semester.  |
|  |             | 8th  | Midterm exam   |   |
|  | 2nd Quarter | 9th  | Internal stability, and Hurwitz stability criterion method | Can explain the concepts of external and internal stability and the conditions under which they match.<br>Can determine the stability using Hurwitz stability criterion method                |
|  |             | 10th | Routh stability criterion method                           | Can determine the stability, including special cases, using Routh stability criterion method,.  |
|  |             | 11th | PID control  | Can explain I/O characteristics of PID controllers (transfer function).<br>Can explain the effect of P action.<br>Can explain the effect of I action.<br>Can explain the effect of D action.. |
|  |             | 12th | How to design PID control systems                          | Can determine PID gain using the ultimate sensitivity method.<br>Can determine the PID gain using the step response method.   |
|  |             | 13th | Discretization of the model                                | Can derive a discrete time model by differentiating the differential equations.<br>Can find a solution of a differential equation, and derive a discrete time model using it.                 |
|  |             | 14th | Control system design simulation exercise                  | Can explain how to simulate the response of a control system by discretizing the model of the control target and the control device.  |
|  |             | 15th | Review   | Review the content of classes in the second half of the semester.   |
|  |             | 16th | Final exam   |   |

#### Evaluation Method and Weight (%)

|                         | Examination | Exercise | Total |
|-------------------------|-------------|----------|-------|
| Subtotal                | 80          | 20       | 100   |
| Basic Proficiency       | 0           | 0        | 0     |
| Specialized Proficiency | 80          | 20       | 100   |
| Cross Area Proficiency  | 0           | 0        | 0     |



|  |             |  |   |  |  |  |  |
|--|-------------|--|---|--|--|--|--|
| Akashi College   |             | Year   | 2023  |  | Course Title   | Solid State Physics C  |  |
| Course Information   |             |  |   |  |  |  |  |
| Course Code  |             | 5526   |   | Course Category  |  | Specialized / Elective   |  |
| Class Format   |             | Lecture  |   | Credits  |  | School Credit: 1   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |   | Student Grade  |  | 5th  |  |
| Term   |             | First Semester   |   | Classes per Week   |  | 2  |  |
| Textbook and/or Teaching Materials   |             |  |   |  |  |  |  |
| Instructor   |             | OHMUKAI Masato   |   |  |  |  |  |
| Course Objectives  |             |  |   |  |  |  |  |
| (1) Learn about the particle nature of light.<br>(2) Learn about crystal structure<br>(3) Learn the principle of X-ray diffraction |             |  |   |  |  |  |  |
| Rubric   |             |  |   |  |  |  |  |
|  |             | Ideal Level  |   | Standard Level   |  | Unacceptable Level   |  |
| Achievement 1  |             | Can discuss on the particle nature of light quantitatively.  |   | Can discuss on the particle nature of light qualitatively.     |  | Cannot discuss on the particle nature of light.                |  |
| Achievement 2  |             | Can classify the crystal structure in detail.  |   | Can show a typical example of crystal structure.               |  | Cannot show a typical example of crystal structure.            |  |
| Achievement 3  |             | Can explain the principle of X-ray diffraction quantitatively.   |   | Understand an outline about X-ray diffraction.                 |  | Do not have knowledge about X-ray diffraction.                 |  |
| Assigned Department Objectives   |             |  |   |  |  |  |  |
| Teaching Method  |             |  |   |  |  |  |  |
| Outline  |             | In Solid State Physics C, we will learn about the important things that year 4 courses Solid State Physics A and B did not cover. In particular, this course will cover the physical structures involved in the atomic arrangement of solids.  |   |  |  |  |  |
| Style  |             | The first part of classes will be taught in a lecture style to explain the outline. Then, each student will self-study. There will be a quiz at the end.   |   |  |  |  |  |
| Notice   |             | It's crucial to make active efforts to understand during class as new concept will keep coming up. It's preferable to pre-study. Student who fail to get a perfect score in quizzes will be given assignment reports. Students who miss 1/3 or more of classes will not be eligible for a passing grade. |   |  |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |   |  |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input type="checkbox"/> Aided by ICT  |   | <input checked="" type="checkbox"/> Applicable to Remote Class |  | <input type="checkbox"/> Instructor Professionally Experienced |  |
|  |             |  |   |  |  |  |  |
| Course Plan  |             |  |   |  |  |  |  |
|  |             |  | Theme   |  | Goals  |  |  |
| 1st Semester   | 1st Quarter | 1st  | Thermal radiation   |  | Understand the background and content of the Planck hypothesis in thermal radiation.   |  |  |
|  |             | 2nd  | Photoelectric and Compton effects                           |  | Can give example in the quantitative discussion of the photoelectric and Compton effects, and understand the particle nature of light. |  |  |
|  |             | 3rd  | Atomic spectrum and law of equipartition of energy in gases |  | Understand the structure of atomic spectrum and law of equipartition of energy in gases.   |  |  |
|  |             | 4th  | Kinetic theory of gases                                     |  | Understand the theory behind the behavior of electrons in metals and semiconductors.   |  |  |
|  |             | 5th  | Crystal structure and Bravais lattice                       |  | Understand the structure of crystals using the concept of lattice, and learn about the types of crystals.                              |  |  |
|  |             | 6th  | Examples of crystal lattice and filling rate                |  | Can calculate the fill rate for a typical crystal.   |  |  |
|  |             | 7th  | Review  |  | Review the overall content learned so far to gain a better understanding.  |  |  |
|  |             | 8th  | Midterm exam  |  | Score 60 or more marks.  |  |  |
|  | 2nd Quarter | 9th  | The basics of X-ray diffraction                             |  | Understand the Bragg condition quantitatively, which is the basis of X-ray diffraction.  |  |  |
|  |             | 10th   | Application of X-ray diffraction                            |  | Learn about that caution is necessary in the actual measurement.   |  |  |
|  |             | 11th   | Imperfection of crystals                                    |  | Learn about examples of point and line defects in crystals.  |  |  |
|  |             | 12th   | Lattice vibration of one kind of atoms                      |  | Learn quantitatively about the vibration of a lattice with one kinds of atoms.   |  |  |
|  |             | 13th   | Lattice vibration of two kinds of atoms                     |  | Learn quantitatively about the vibration of a lattice with two kinds of atoms.   |  |  |
|  |             | 14th   | theory of specific heat of solids                           |  | Learn three theories of specific heat of solids.   |  |  |
|  |             | 15th   | Review  |  | Organize the content learned so far to gain a better understanding.  |  |  |
|  |             | 16th   | Final exam  |  | Score 60 or more marks.  |  |  |
| Evaluation Method and Weight (%)   |             |  |   |  |  |  |  |

|                            | Examination | Presentation | Mutual<br>Evaluations<br>between<br>students | Behavior | Portfolio | Other | Total |
|----------------------------|-------------|--------------|--|----------|-----------|-------|-------|
| Subtotal                   | 100         | 0            | 0  | 0        | 0         | 0     | 100   |
| Basic<br>Proficiency       | 0           | 0            | 0  | 0        | 0         | 0     | 0     |
| Specialized<br>Proficiency | 100         | 0            | 0  | 0        | 0         | 0     | 100   |
| Cross Area<br>Proficiency  | 0           | 0            | 0  | 0        | 0         | 0     | 0     |

|   |  |                                       |  |   |   |
|---|--|---------------------------------------|--|---|---|
| Akashi College  |  | Year                                  | 2023   | Course Title  | Application of Electronics  |
| Course Information  |  |                                       |  |   |   |
| Course Code   | 5527   |                                       | Course Category  | Specialized / Elective  |   |
| Class Format  | Lecture  |                                       | Credits  | School Credit: 1  |   |
| Department  | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade  | 5th   |   |
| Term  | First Semester   |                                       | Classes per Week   | 2   |   |
| Textbook and/or Teaching Materials  |  |                                       |  |   |   |
| Instructor  | ENOMOTO Ryuji  |                                       |  |   |   |
| Course Objectives   |  |                                       |  |   |   |
| (1) Understand the typical kinds of clinical tests (laboratory tests) and their purpose and significance.<br>(2) Understand blood cell analysis methods, in particular the principle and characteristics of flow cytometers.<br>(3) Understand the measurement principles and characteristics of spectroscopic detection technologies used in testing of coagulation, biochemistry, and immunity, etc.<br>(4) Understand typical clinical testing equipment systems and component technologies. |  |                                       |  |   |   |
| Rubric  |  |                                       |  |   |   |
|   | Ideal Level  |                                       | Standard Level   |   | Unacceptable Level  |
| Achievement 1   | Accurately understand the typical kinds of clinical tests (laboratory tests) and their purpose and significance.   |                                       | Understand the typical kinds of clinical tests (laboratory tests) and their purpose and significance.  |   | Do not understand the typical kinds of clinical tests (laboratory tests) and their purpose and significance.  |
| Achievement 2   | Accurately understand blood cell analysis methods, in particular the principle and characteristics of flow cytometers  |                                       | Understand blood cell analysis methods, in particular the principle and characteristics of flow cytometers   |   | Do not understand blood cell analysis methods, in particular the principle and characteristics of flow cytometers   |
| Achievement 3   | Accurately understand the measurement principles and characteristics of spectroscopic detection technologies used in testing of coagulation, biochemistry, and immunity, etc.  |                                       | Understand the measurement principles and characteristics of spectroscopic detection technologies used in testing of coagulation, biochemistry, and immunity, etc. |   | Do not understand the measurement principles and characteristics of spectroscopic detection technologies used in testing of coagulation, biochemistry, and immunity, etc. |
|   | Accurately understand typical clinical testing equipment systems and component technologies.   |                                       | Understand typical clinical testing equipment systems and component technologies.  |   | Do not understand typical clinical testing equipment systems and component technologies.  |
| Assigned Department Objectives  |  |                                       |  |   |   |
| Teaching Method   |  |                                       |  |   |   |
| Outline   | Clinical testing is essential for the diagnoses and treatment in today's medicine. As modern medicine advances, technological innovation and further development are progressing. This class will explain the outlines of laboratory tests for analysis of blood, urine, etc., and the basics of the measurement technologies, etc. applied to these tests. It will also cover the basic principles of measurement in the fields of biochemical, immunological, genetic measurement, etc., and the optical, electronic, fluid, chemical, and molecular biological technologies and measuring instruments used for these measurements. In addition, students will deepen their knowledge of disease and health management through this class. |                                       |  |   |   |
| Style   | The goal is to understand genetic testing and bioinformatics, and the class will be taught in a lecture style from week 1 to week 15.<br>Liaison: Kazunari Inoue   |                                       |  |   |   |
| Notice  | Knowledge of biology is preferred.<br>Students who miss 1/3 or more of classes will not be eligible for a passing grade.   |                                       |  |   |   |
| Characteristics of Class / Division in Learning   |  |                                       |  |   |   |
| <input type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |  | <input type="checkbox"/> Applicable to Remote Class   | <input type="checkbox"/> Instructor Professionally Experienced  |
| Course Plan   |  |                                       |  |   |   |
|   |  |                                       | Theme  | Goals   |   |
| 1st Semester  | 1st Quarter  | 1st                                   | Introduction to clinical testing (1)   | Understand the role and type of testing in health management, diagnosis, and treatment, as well as the overall outline of clinical testing.<br>Understand how to interpret inspection results and control accuracy.   |   |
|   |  | 2nd                                   | Introduction to clinical testing (2)   | Same as above   |   |
|   |  | 3rd                                   | Biochemical testing (1)  | Understand the significance of the items in biochemical testing and the method of testing, and the outline of biochemical testing technologies.<br>Understand the outline of biochemical testing equipment and the principles of measurement and spectroscopy applied to the equipment. |   |
|   |  | 4th                                   | Biochemical testing (2)  | Same as above   |   |

|                                  |             |      |  |   |
|----------------------------------|-------------|------|--|---|
|                                  |             | 5th  | Hematology testing (1)                 | Understand an overview of testing technologies for blood cells and coagulation testing technologies.<br>Understand the hydrodynamics and engineering technologies used in flow cytometers used in cell analysis such as red blood cells and white blood cells.  |
|                                  |             | 6th  | Hematology Testing (2)                 | Same as above   |
|                                  |             | 7th  | General examination (urine, and feces) | Understand an overview of urinary qualitative testing, urinary sediment testing technologies and their measuring equipment.<br>Also understand the outline of fecal occult blood testing.   |
|                                  |             | 8th  | Midterm exam                           |   |
|                                  | 2nd Quarter | 9th  | Company tour                           | By visiting a company that develops and produces clinical testing equipment and reagents, and by seeing the activities of a company involved in actual testing equipment and clinical testing, the students can deepen their understanding of clinical testing. |
|                                  |             | 10th | Immunology Testing (1)                 | Understand the overview of immunological testing technologies.<br>Understand the general description of chemiluminescent immunoassay measuring devices and the principles of measurement and detection technologies that are applied to them.                   |
|                                  |             | 11th | Immunology Testing (2)                 | Same as above   |
|                                  |             | 12th | Genetic Testing (1)                    | Understand an overview of genetic testing technologies.<br>Understand the outline of PCR instruments, sequencers and other genetic test instruments, and the measurement principles and detection technologies applied to them.                                 |
|                                  |             | 13th | Genetic Testing (2)                    | Same as above   |
|                                  |             | 14th | Microbiology Testing                   | Understand the outline of microbiology testing technologies.<br>Understand the test equipment used for microbiology testing and the measurement principles and detection technologies applied to it.  |
|                                  |             | 15th | Topics for clinical tests              | Understand recent topics in clinical testing.<br>Can review all of previous lectures.   |
|                                  |             | 16th | Final exam                             | Final exam  |
| Evaluation Method and Weight (%) |             |      |  |   |
|                                  | Examination |      | Presentation                           | Total   |
| Subtotal                         | 80          |      | 20                                     | 100   |
| Basic Proficiency                | 0           |      | 0                                      | 0   |
| Specialized Proficiency          | 80          |      | 20                                     | 100   |
| Cross Area Proficiency           | 0           |      | 0                                      | 0   |

|  |             |  |                                  |  |  |  |
|--|-------------|--|----------------------------------|--|--|--|
| Akashi College   |             | Year   | 2023                             |  | Course Title   | Image Engineering  |
| Course Information   |             |  |                                  |  |  |  |
| Course Code  |             | 5528   |                                  | Course Category  | Specialized / Elective   |  |
| Class Format   |             | Lecture  |                                  | Credits  | Academic Credit: 2   |  |
| Department   |             | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                  | Student Grade  | 5th  |  |
| Term   |             | Second Semester  |                                  | Classes per Week   | 2  |  |
| Textbook and/or Teaching Materials   |             |  |                                  |  |  |  |
| Instructor   |             | NAKAI Yuichi   |                                  |  |  |  |
| Course Objectives  |             |  |                                  |  |  |  |
| (1) Understand the scope and examples of applications of image encoding technology.<br>(2) Understand the nature of image information and understand why image encoding technology is needed.<br>(3) Understand the outline and characteristics of various types of image encoding.<br>(4) Understand the practical use of basic image processing and image encoding technologies. |             |  |                                  |  |  |  |
| Rubric   |             |  |                                  |  |  |  |
|  |             | Ideal Level  |                                  | Standard Level   |  | Unacceptable Level   |
| Achievement 1  |             | Can fully explain the scope and examples of applications of image encoding technologies.   |                                  | Can explain the scope and examples of applications of image encoding technologies.                     |  | Cannot explain the scope and examples of applications of image encoding technologies.          |
| Achievement 2  |             | Understand the nature of image information and can accurately explain why image encoding technologies are needed .   |                                  | Understand the nature of image information and can explain why image encoding technologies are needed. |  | Cannot explain the nature of image information and why image encoding technologies are needed. |
| Achievement 3  |             | Can specifically explain the outline and characteristics of various types of image encoding.   |                                  | Can explain the outline and characteristics of various types of image encoding.                        |  | Cannot explain the outline and characteristics of various types of image encoding.             |
| Achievement 4  |             | Can accurately explain the practical use of basic image processing and image encoding technologies   |                                  | Can explain the practical use of basic image processing and image encoding technologies.               |  | Cannot explain the practical use of basic image processing and image encoding technologies.    |
| Assigned Department Objectives   |             |  |                                  |  |  |  |
| Teaching Method  |             |  |                                  |  |  |  |
| Outline  |             | When handling images as digital information, technologies for reducing their data volume (image encoding or image compression) are a must. In this lecture, we will be explaining the nature of the image information briefly, and then giving lectures on various image encoding technologies. In addition, we will ensure the knowledge learned in the lecture by doing exercise assignments using matrix computing software, etc.   |                                  |  |  |  |
| Style  |             | Slides will be mainly used to explain the content in class. Also, since this is a learning-credit subject, there will be three to four assignments over the course of half a semester. Assignments will be about creating programs that perform specified processes, so we will explain the application students can used for the assignments in advance.  |                                  |  |  |  |
| Notice   |             | This course's content will amount to 90 hours of study in total. These hours include the learning time guaranteed in classes and the standard self-study time required for pre-study / review, and completing assignment reports. As this is a learning-credit subject, there will be three to four assignments over the course of half a semester. All assignments must be submitted to earn the credits. Since the assignments involve programming, it's desirable to have experiences in programming (in any language). Students who miss 1/3 or more of classes will not be eligible for evaluation. |                                  |  |  |  |
| Characteristics of Class / Division in Learning  |             |  |                                  |  |  |  |
| <input type="checkbox"/> Active Learning   |             | <input checked="" type="checkbox"/> Aided by ICT   |                                  | <input checked="" type="checkbox"/> Applicable to Remote Class   |  | <input type="checkbox"/> Instructor Professionally Experienced                                 |
|  |             |  |                                  |  |  |  |
| Course Plan  |             |  |                                  |  |  |  |
|  |             |  | Theme                            |  | Goals  |  |
| 2nd Semester<br>r  | 3rd Quarter | 1st  | The nature of image information  |  | Digitized image information is generally said to have stronger image correlation. Can explain what image correlation is and what happens when image correlation is stronger. |  |
|  |             | 2nd  | Image manipulation by Octave (1) |  | Understand how to use Python to accomplish the assignments.  |  |
|  |             | 3rd  | Image manipulation by Octave (2) |  | Can use Python to do the processing given as an assignment.  |  |
|  |             | 4th  | Entropy encoding (1)             |  | Can explain the concept of entropy encoding, which is often used together with various types of encoding.  |  |
|  |             | 5th  | Entropy encoding (2)             |  | Can briefly explain Huffman and arithmetic encodings as typical techniques for entropy encoding.   |  |
|  |             | 6th  | Predictive encoding (1)          |  | Can explain the principle of predictive encoding, the simplest of image encoding.  |  |
|  |             | 7th  | Predictive encoding (2)          |  | Can explain the characteristics of predictive encoding, and can explain how to compensate for the shortcomings.  |  |
|  |             | 8th  | Midterm exam                     |  |  |  |

|  |                |      |                         |  |
|--|----------------|------|-------------------------|--|
|  | 4th<br>Quarter | 9th  | Transform encoding (1)  | Can explain the concept of transform encoding, and can explain the two-dimensional discrete cosine transform (DCT), which is the mainstream of image encoding today. |
|  |                | 10th | Transform encoding (2)  | Can explain JPEG, which is an image coding method based on DCT.  |
|  |                | 11th | Wavelet transformation  | Can briefly explain the wavelet transform, which is gaining attention as the next-generation method of transform encoding.   |
|  |                | 12th | Vector quantization (1) | Can explain the overview of vector quantization, an extension of scalar quantization.  |
|  |                | 13th | Vector quantization (2) | Can explain the performance, design techniques and challenges of vector quantization.  |
|  |                | 14th | Other image encoding    | Can explain outline of other image encoding methods such as block truncation encoding, progressive encoding, etc.  |
|  |                | 15th | Video encoding          | Can explain various video encoding methods briefly.  |
|  |                | 16th | Final exam              |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Exercise | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|----------|-------|-------|
| Subtotal                | 70          | 0            | 0                                   | 0        | 30       | 0     | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0        | 0     | 0     |
| Specialized Proficiency | 70          | 0            | 0                                   | 0        | 30       | 0     | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0        | 0     | 0     |

|  |  |                                       |   |  |  |
|--|--|---------------------------------------|---|--|--|
| Akashi College   |  | Year                                  | 2023  | Course Title   | Qualifications in Electric and Electronic Engineering I  |
| Course Information   |  |                                       |   |  |  |
| Course Code  | 5529   |                                       | Course Category   | Specialized / Elective   |  |
| Class Format   | その他  |                                       | Credits   | School Credit: 1   |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |                                       | Student Grade   | 5th  |  |
| Term   | Year-round   |                                       | Classes per Week  | 1  |  |
| Textbook and/or Teaching Materials   |  |                                       |   |  |  |
| Instructor   | OHMUKAI Masato   |                                       |   |  |  |
| Course Objectives  |  |                                       |   |  |  |
| The goal is to pass a certification exam by an external organization on the contents of electrical and electronic engineering. As the faculty member in charge will be responsible for the examination of the credit approval for relevant qualifications, students should consult with them in advance if they wish to earn credits for the course. |  |                                       |   |  |  |
| Rubric   |  |                                       |   |  |  |
|  | Ideal Level  |                                       | Standard Level  |  | Unacceptable Level   |
| Achievement 1  | Can pass the examination of Class 3 electrical chief engineer or the AI/DD comprehensive class of telecommunication construction personnel competently.  |                                       | Can pass the examination of Class 3 electrical chief engineer or the AI/DD comprehensive class of telecommunication construction personnel. |  | Cannot pass the examination of Class 3 electrical chief engineer or the AI/DD comprehensive class of telecommunication construction personnel. |
| Assigned Department Objectives   |  |                                       |   |  |  |
| Teaching Method  |  |                                       |   |  |  |
| Outline  | This course is taken as a subject to award credits according to the results of the certification exams held by an external organization as results of the study in the field of electrical and electronic engineering. If students pass any of the designated external certification exams, they will be awarded one credit by completing certain procedures by the deadline specified by the Student Services Division. |                                       |   |  |  |
| Style  | No lessons will be given.  |                                       |   |  |  |
| Notice   | A certificate of passing or proof of passing is required for credit approval, and the application period shall be after the winter holidays and up to the date specified by the Academic Affairs Office. If a certifying document is not submitted within this period, the credit will not be approved. Keep the deadline.<br>No conditions for missing classes that will not be eligible for a passing grade.           |                                       |   |  |  |
| Characteristics of Class / Division in Learning  |  |                                       |   |  |  |
| <input checked="" type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT |   | <input checked="" type="checkbox"/> Applicable to Remote Class | <input type="checkbox"/> Instructor Professionally Experienced   |
| Course Plan  |  |                                       |   |  |  |
|  |  |                                       | Theme   | Goals  |  |
| 1st Semester   | 1st Quarter  | 1st                                   | Self-study<br>Self-study for certification exams (no lecture)   | Can learn voluntarily.   |  |
|  |  | 2nd                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 3rd                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 4th                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 5th                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 6th                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 7th                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 8th                                   | No midterm exam   |  |  |
|  | 2nd Quarter  | 9th                                   | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 10th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 11th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 12th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 13th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 14th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 15th                                  | Same as above<br>Same as above  | Can learn voluntarily.   |  |
|  |  | 16th                                  | No final exam   |  |  |

|              |             |      |                                |                        |
|--------------|-------------|------|--------------------------------|------------------------|
| 2nd Semester | 3rd Quarter | 1st  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 2nd  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 3rd  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 4th  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 5th  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 6th  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 7th  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 8th  | No midterm exam                |                        |
|              | 4th Quarter | 9th  | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 10th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 11th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 12th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 13th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 14th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 15th | Same as above<br>Same as above | Can learn voluntarily. |
|              |             | 16th | No final exam                  |                        |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 0           | 0            | 0                                   | 0        | 0         | 100   | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 0           | 0            | 0                                   | 0        | 0         | 100   | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |



|  |  |   |   |   |                        |  |
|--|--|---|---|---|------------------------|--|
| Akashi College   |  | Year  | 2023  |   | Course Title           | Qualifications in Electric and Electronic Engineering II                   |
| Course Information   |  |   |   |   |                        |  |
| Course Code  | 5530   |   |   | Course Category   | Specialized / Elective |  |
| Class Format   | その他  |   |   | Credits   | School Credit: 1       |  |
| Department   | Electrical and Computer Engineering<br>Electrical Engineering Course   |   |   | Student Grade   | 5th                    |  |
| Term   | Year-round   |   |   | Classes per Week  | 1                      |  |
| Textbook and/or Teaching Materials   |  |   |   |   |                        |  |
| Instructor   | OHMUKAI Masato   |   |   |   |                        |  |
| Course Objectives  |  |   |   |   |                        |  |
| The goal is to pass a certification exam by an external organization on the contents of electrical and electronic engineering. As the faculty member in charge will be responsible for the examination of the credit approval for relevant qualifications, students should consult with them in advance if they wish to earn credits for the course. |  |   |   |   |                        |  |
| Rubric   |  |   |   |   |                        |  |
|  |  | Ideal Level   |   | Standard Level  |                        | Unacceptable Level   |
| Achievement 1  |  | Can pass the examination of Class 1 or Class 2 electric chief engineer competently. |   | Can pass the examination of Class 1 or Class 2 electric chief engineer. |                        | Cannot pass the examination of Class 1 or Class 2 electric chief engineer. |
| Assigned Department Objectives   |  |   |   |   |                        |  |
| Teaching Method  |  |   |   |   |                        |  |
| Outline  | This course is taken as a subject to award credits according to the results of the certification exams held by an external organization as results of the study in the field of electrical and electronic engineering. If students pass any of the designated external certification exams, they will be awarded one credit by completing certain procedures by the deadline specified by the Student Services Division. |   |   |   |                        |  |
| Style  | No lessons will be given.  |   |   |   |                        |  |
| Notice   | A certificate of passing or proof of passing is required for credit approval, and the application period shall be after the winter holidays and up to the date specified by the Academic Affairs Office. If a certifying document is not submitted within this period, the credit will not be approved. Keep the deadline.<br>No conditions for missing classes that will not be eligible for a passing grade.           |   |   |   |                        |  |
| Characteristics of Class / Division in Learning  |  |   |   |   |                        |  |
| <input checked="" type="checkbox"/> Active Learning  |  | <input type="checkbox"/> Aided by ICT   |   | <input checked="" type="checkbox"/> Applicable to Remote Class          |                        | <input type="checkbox"/> Instructor Professionally Experienced             |
|  |  |   |   |   |                        |  |
| Course Plan  |  |   |   |   |                        |  |
|  |  |   | Theme   |   | Goals                  |  |
| 1st Semester   | 1st Quarter  | 1st   | Self-study<br>Self-study for certification exams (no lecture) |   | Can learn voluntarily. |  |
|  |  | 2nd   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 3rd   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 4th   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 5th   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 6th   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 7th   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 8th   | No midterm exam   |   |                        |  |
|  | 2nd Quarter  | 9th   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 10th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 11th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 12th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 13th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 14th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 15th  | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 16th  | No final exam   |   |                        |  |
| 2nd Semester   | 3rd Quarter  | 1st   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |
|  |  | 2nd   | Same as above<br>Same as above                                |   | Can learn voluntarily. |  |

|  |                |      |                                |                        |
|--|----------------|------|--------------------------------|------------------------|
|  |                | 3rd  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 4th  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 5th  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 6th  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 7th  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 8th  | No midterm exam                |                        |
|  | 4th<br>Quarter | 9th  | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 10th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 11th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 12th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 13th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 14th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 15th | Same as above<br>Same as above | Can learn voluntarily. |
|  |                | 16th | No final exam                  |                        |

#### Evaluation Method and Weight (%)

|                            | Examination | Presentation | Mutual<br>Evaluations<br>between<br>students | Behavior | Portfolio | Other | Total |
|----------------------------|-------------|--------------|--|----------|-----------|-------|-------|
| Subtotal                   | 0           | 0            | 0  | 0        | 0         | 100   | 100   |
| Basic<br>Proficiency       | 0           | 0            | 0  | 0        | 0         | 0     | 0     |
| Specialized<br>Proficiency | 0           | 0            | 0  | 0        | 0         | 100   | 100   |
| Cross Area<br>Proficiency  | 0           | 0            | 0  | 0        | 0         | 0     | 0     |