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|--|---|---|---|--|---------------------------|
| Tsuyama College  |   | Year  | 2021  | Course Title   | Communication Engineering |
| Course Information   |   |   |   |  |                           |
| Course Code  | 0121  |   | Course Category   | Specialized / Elective   |                           |
| Class Format   | Lecture   |   | Credits   | Academic Credit: 2   |                           |
| Department   | Department of Integrated Science and Technology Communication and Informations System Program   |   | Student Grade   | 5th  |                           |
| Term   | Year-round  |   | Classes per Week  | 1  |                           |
| Textbook and/or Teaching Materials   | Required points will be distributed.  |   |   |  |                           |
| Instructor   | SHIMADA Takao   |   |   |  |                           |
| Course Objectives  |   |   |   |  |                           |
| Learning purposes: To understand the basic communication technologies used in communication systems such as telephones.  |   |   |   |  |                           |
| Course Objective:<br>1.To understand the principle of the modulation method.<br>2.To understand the principle of the multiplexing method.<br>3.To understand the principle of the coaxial cable and optical fiber. |   |   |   |  |                           |
| Rubric   |   |   |   |  |                           |
|  | Excellent   | Good  | Acceptable  | Not acceptable   |                           |
| Achievement 1  | Understand the principle of the modulation method and be able to explain it accurately.   | Understand and explain the principles of modulation methods.                                  | An outline of the principle of the modulation method can be explained.        | Not reach the left   |                           |
| Achievement 2  | Understand the principle of the multiplexing method and be able to explain it accurately.   | Understand and explain the principles of multiplexing methods.                                | An outline of the principle of the multiplexing method can be explained.      | Not reach the left   |                           |
| Achievement 3  | Understand the basic principles of coaxial cables and optical fibers, and be able to explain them accurately.   | Understand the basic principles of coaxial cables and optical fibers, and be able to explain. | Be able to outline the basic principles of coaxial cables and optical fibers. | Not reach the left   |                           |
| Assigned Department Objectives   |   |   |   |  |                           |
| Teaching Method  |   |   |   |  |                           |
| Outline  | <p>General or Specialized : Specialized</p> <p>Field of learning : Electrical and Electronic Engineering</p> <p>Foundational academic disciplines : Engineering / Electrical and Electronic Engineering / Communication Engineering</p> <p>Relationship with Educational Objectives : This class is equivalent to "(3) Acquire deep foundation knowledge of the major subject area".</p> <p>Course outline : Learn the basics about modulation, a communication technology that is used around us in devices such as telephones.</p>  |   |   |  |                           |
| Style  | <p>Course method : Mainly, board-writing is used. Sometimes, practices regarding the foundation will be held.</p> <p>Grade evaluation method : Exams (80%) + Reports (20%). Examinations will be conducted 2 times, and the evaluation ratios will be the same. As a general rule, we do not allow re-examination.</p>  |   |   |  |                           |
| Notice   | <p>Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours missed) in order to complete the 5th year course. This is a class that requires study outside of class hours. A total of 45 hours of study is required per credit, including both class time and study outside class time. Follow the instructions of the instructor regarding study outside of class hours.</p> <p>Course advice:<br/>Review the contents of Electric Circuits I and Electric Circuits II as a preparatory study. Since there are many technical terms, it is not necessary to memorize them but to understand their meanings and definitions.</p> <p>Foundational subjects :<br/>Electric Circuits I (3rd year), Electronic Circuits I (3rd), Electric Circuits II (4th), Electronic Circuits II (4th)<br/>Related subjects : Electric and Electronic System Engineering Experiments (4th year)</p> <p>Attendance advice :<br/>If you do not understand the content of the class, ask the teacher.</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 |                           |
| Elective must complete subjects  |   |   |   |  |                           |
| Course Plan  |   |   |   |  |                           |
|  |   |   | Theme   | Goals  |                           |
| 2nd Semester   | 3rd Quarter   | 1st   | Guidance, Overview of communication system                                    | Overview of communication system                               |                           |
|  |   | 2nd   | Analog modulation 1   | Amplitude modulation   |                           |
|  |   | 3rd   | Analog modulation 2   | Frequency modulation, Phase modulation                         |                           |

|  |             |      |                                       |   |
|--|-------------|------|---------------------------------------|---|
|  |             | 4th  | Digital modulation 1                  | Amplitude shift keying, Frequency shift keying              |
|  |             | 5th  | Digital modulation 2                  | Phase shift keying  |
|  |             | 6th  | Pulse code modulation 1               | Principle of pulse code modulation 1                        |
|  |             | 7th  | Pulse code modulation 2               | Principle of pulse code modulation 2, Quantization noise    |
|  |             | 8th  | 2nd semester mid-term exam            |   |
|  | 4th Quarter | 9th  | Return and commentary of exam answers |   |
|  |             | 10th | Multiplexing 1                        | Frequency division multiplexing, Time division multiplexing |
|  |             | 11th | Multiplexing 2                        | Code division multiplexing                                  |
|  |             | 12th | Coaxial cable                         | Propagation principle, Characteristic impedance             |
|  |             | 13th | Optical fiber 1                       | Propagation principle                                       |
|  |             | 14th | Optical fiber 2                       | Maximum light receiving angle                               |
|  |             | 15th | 2nd semester final exam               |   |
|  |             | 16th | Return and commentary of exam answers |   |

#### Evaluation Method and Weight (%)

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