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| Tsuyama College                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Year                                                                                              | 2021                                                                                                      | Course Title                                                                                               | Medical and Welfare Engineering                                |
| Course Information                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Course Code                                                                                                                                                                                                                                                                                                                                   | 0166                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                   | 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                                                                                                                                                                                                                                                                                                            | PPT(From lecturer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Instructor                                                                                                                                                                                                                                                                                                                                    | CHO Feifei                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Course Objectives                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Learning purposes: To learn the basics of various technologies and human-centered engineering in the fields of medical and welfare engineering, which will lead to practical medical and welfare engineering technology.                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Course Objectives<br>1. To learn about human understanding and practical behavior in medical, welfare, and other fields.<br>2. To be able to explain medicine and welfare from the perspective of manufacturing or engineering.<br>3. To be able to explain the principles and overview of typical medical and welfare engineering equipment. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Rubric                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               | Excellent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Good                                                                                              | Acceptable                                                                                                | Not acceptable                                                                                             |                                                                |
| Achievement 1                                                                                                                                                                                                                                                                                                                                 | Learn about human understanding and practical behavior in medical, welfare, and other fields very well.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Learn about human understanding and practical behavior in medical, welfare, and other fields.     | Learn about human understanding and practical behavior in medical, welfare, and other fields not so good. | Doesn't know human understanding and practical behavior in medical, welfare, and other fields.             |                                                                |
| Achievement 2                                                                                                                                                                                                                                                                                                                                 | Be able to explain medicine and welfare from the perspective of manufacturing or engineering very well.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Be able to explain medicine and welfare from the perspective of manufacturing or engineering.     | Cannot explain medicine and welfare from the perspective of manufacturing or engineering.                 | Cannot explain medicine and welfare from the perspective of manufacturing or engineering very well.        |                                                                |
| Achievement 3                                                                                                                                                                                                                                                                                                                                 | Able to explain the principles and overview of typical medical and welfare engineering equipment very well.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Able to explain the principles and overview of typical medical and welfare engineering equipment. | Can not explain the principles and overview of typical medical and welfare engineering equipment.         | Cannot explain the principles and overview of typical medical and welfare engineering equipment very well. |                                                                |
| Assigned Department Objectives                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Teaching Method                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Outline                                                                                                                                                                                                                                                                                                                                       | General or Specialized : Specialized<br>Field of learning : Integrated Subjects and others<br>Foundational academic disciplines: Engineering/Mechanical Engineering/Intelligent Mechanics and Mechanical Systems<br>Relationship with Educational Objectives :This class is equivalent to "(4) Develop multi-disciplinary ability (5) Attain a global perspective and understanding of social development (6) Develop problem solving ability (7) Develop communication and presentation abilities".<br>Relationship with JABEE programs :The main goals of learning / education in this class is "(A) , A-1".<br><br>Course outline: This course introduces students to the ideas, methods of thinking and knowledge, and applications that are fundamental to the study of ergonomics. Ergonomics "studies the relationship between humans and their living environment from the morphological, physiological, psychological, and behavioral aspects of human beings. |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Style                                                                                                                                                                                                                                                                                                                                         | Course method: Students must prepare, review, and work on assignments after school and complete the reports. Don't be late. If you are more than 25 minutes late, once of classes will be canceled. If you are more than 75 minutes late, twice of classes will be canceled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| Notice                                                                                                                                                                                                                                                                                                                                        | Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours missed) . This is a "class that requires study outside of class hours". Classes are offered for 15 hours per credit, but 30 credit hours are required in addition to this. Follow the instructions of your instructor for these studies.<br>Course advice: Preparatory study to be done in advance.<br>Foundational subjects: Ethics (1st year), Engineering Ethics (5th)<br>Related subjects: Medical and Welfare Engineering (5), Welfare Equipment Design (5)                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                   |                                                                                                           |                                                                                                            |                                                                |
| 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: What is Medical and Welfare Engineering?                                                        | The course will not be offered this year.                                                                  |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2nd                                                                                               | System and Background                                                                                     |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3rd                                                                                               | Systems for the Elderly and Persons with Disabilities                                                     |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4th                                                                                               | Self-support and nursing care support                                                                     |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5th                                                                                               | Business relevance                                                                                        |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6th                                                                                               | Social Direction.                                                                                         |                                                                                                            |                                                                |
|                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7th                                                                                               | Sensors, Transducers                                                                                      |                                                                                                            |                                                                |

|              |             |      |                                       |  |
|--------------|-------------|------|---------------------------------------|--|
|              | 2nd Quarter | 8th  | 1st semester mid-term exam            |  |
|              |             | 9th  | Return and commentary of exam answers |  |
|              |             | 10th | Surgical and therapeutic devices      |  |
|              |             | 11th | Independence and assistive devices    |  |
|              |             | 12th | Therapeutic and prosthetic devices    |  |
|              |             | 13th | Training Equipment                    |  |
|              |             | 14th | Future Development                    |  |
|              |             | 15th | (1st semester final exam)             |  |
|              |             | 16th | Return and commentary of exam answers |  |
| 2nd Semester | 3rd Quarter | 1st  |                                       |  |
|              |             | 2nd  |                                       |  |
|              |             | 3rd  |                                       |  |
|              |             | 4th  |                                       |  |
|              |             | 5th  |                                       |  |
|              |             | 6th  |                                       |  |
|              |             | 7th  |                                       |  |
|              |             | 8th  |                                       |  |
|              | 4th Quarter | 9th  |                                       |  |
|              |             | 10th |                                       |  |
|              |             | 11th |                                       |  |
|              |             | 12th |                                       |  |
|              |             | 13th |                                       |  |
|              |             | 14th |                                       |  |
|              |             | 15th |                                       |  |
|              |             | 16th |                                       |  |

#### Evaluation Method and Weight (%)

|                         | Examination | Presentation | Mutual Evaluations between students | Behavior | Portfolio | Other | Total |
|-------------------------|-------------|--------------|-------------------------------------|----------|-----------|-------|-------|
| Subtotal                | 50          | 10           | 10                                  | 0        | 10        | 20    | 100   |
| Basic Proficiency       | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |
| Specialized Proficiency | 50          | 10           | 10                                  | 0        | 10        | 20    | 100   |
| Cross Area Proficiency  | 0           | 0            | 0                                   | 0        | 0         | 0     | 0     |