

SUBJECT DESCRIPTION FORM

SUBJECT CODE: HTI4152

SUBJECT TITLE: Biomedical Engineering Design

CREDITS: 3

PRE-REQUISITES: HTI2121 Introduction to Biomechanics OR Equivalent
HTI2122 Mechanics of Biomaterials and Tissues OR Equivalent
HTI2111 Bioelectrical Tech. I – Circuits & System OR Equivalent

RESPONSIBLE DEPARTMENT: Department of Health Technology & Informatics

RESPONSIBLE MEMBER OF THE ACADEMIC STAFF:

Dr. Ming Zhang

CONTACT HOURS:

Total Contact 45 hours

LEARNING OUTCOMES:

At the end of the subject, students are expected to be able to:

1. Appreciate main methodologies and considerations in engineering design.
2. Understand mechanical designs of various mechanisms and machine elements
3. Use engineering design software in design process
4. Apply mechanical and electronic principles to the biomedical engineering design.

SYLLABUS:

Design methodology, design for standards, design communication, mechanism design, machine element design, computer-aided design and simulation, rapid prototyping, electronic control, design examples in biomedical engineering.

TEACHING & LEARNING APPROACHS:

There will be lectures and tutorials dealing with fundamental design approaches and design examples in biomedical engineering field. Students are required to carry out group projects and class discussions and presentations. Students' knowledge is tested by quizzes, home assignments, reports and presentation conducted during the course.

ASSESSMENT:

100% Continuous Assessment

- Class participation
- Home assignment
- Quiz
- Project presentation and report

REFERENCE MATERIALS:

1. Dieter G, Engineering Design: a Materials and Processing Approach, McGraw-Hill, 1991.
2. Wallance K, Engineering Design, a Systematic Approach, The Design Council, London, 1988.
3. Jensen C, Engineering Drawing and Design, Mcsmillan/McGraw-Hill, 1990
4. Juvinall A, Fundamentals of Machine Component Design, Wiley, 1991.
5. Norton RL, Design of Machinery, McGraw-Hill, Inc., 1992.
6. Fries RC, Handbook of Medical Device Design, Marcel Dekker, Inc., 2000.
7. Taylor DL, Computer Aided Design, Wesley, 1992.