[logo]	**HO CHI MINH UNIVERSITY OF TECHNOLOGY AND EDUCATION** **FACULTY OF ELECTRICAL AND ELECTRONICS ENGINEERING**	**Programme:** Biomedical Engineering **Programme Level:** Undergraduate

Syllabus

1. **Course Name:** Computer Aided Design

2. **Course Code:** BIME332265

3. **Credits:** 3 credits (3:0:6) (3-hour lecture and 6 hours of self-study per week)

4. **Course Instructor(s):**

    A. Dang-Khoa Tran, MEng

    B. Minh-Triet Nguyen, MEng

5. **Registration Requirements**

    A. Pre-requisite Course(s): None

    B. Previous Course(s): None

6. **Course Descriptions:**

    This course introduces the learners to the use of CAD software for product design simulation and modeling. The course provides the learners with the knowledge and the ability to use CAD software proficiently. After completing this course, students will be able to design and model structural components of machinery and devices and assemble the components to create functional devices on a computer. Students can then proceed with constructing these device models by creating engineering drawings and blueprints using CAD software.

7. **Course Learning Outcomes (CLOs)**

CLOs	Descriptions *After completing this course, you should be able to:*	ELO(s)/PI(s)	Competency
CLO1	Use Solidworks and other CAD software to perform 2D and 3D sketches, export CAD files, and assemble 3D components to create a functional device design.	ELO1/PI1.1	R
CLO2	Simulate and analyze the characteristics of designed structures based on the applied materials	ELO2/PI2.2	R
CLO3	Work together to build a 3D model based on the client's requirements, show respect to others, demonstrate excellent collaboration ability, and be responsible for self-duties within a team.	ELO5/PI5.1	R
CLO4	Create innovative 3D medical device models that meet technical standards, client's requirements, and additive or subtractive manufacturing feasibility.	ELO9/PI9.1	R

> *Notes: **I**: Introduction, **R**: Reinforce, **M**: Mastery*

8. **Course Content**

- Introduction to Solidworks modeling software including Sketch, 3D-part, Assembly and Drawing environments.
- Introduction to standard view orientation to select a standard view, activate the View Selector, use viewports, create custom views, and save them to SOLIDWORKS. Students can also access camera views and snapshots.
- Sketch drawing - Sketch: Define the plane, unit of measure, basic drawing commands, how to move, copy, rotate, enlarge sketch lines.
- Building 3D - Part: Complete Sketch drawings, build blocks on demand rectangular boxes, spheres, cylinders, and complex structural shapes.
- Assembly details – Assembly: Connect the Parts, fix the contact surfaces between the two parts, run the assembly simulation.
- Technical drawings – Drawing: Output detailed drawings with dimensions and units of measurement, display critical dimensions, and avoid duplication of dimensions in technical drawings.
- Dynamics simulation, material selections, import and export of CAD files, and recording assembly demonstration videos.

9. Teaching Methods

- Demonstration
- Group activities
- Practical experiments

10. Student Assessments

- Grading scale: **10**
- Assessment plan:

No.	Content	CLOs	Competency	Assessment Methods	Assessment Tools	Weighting (%)
Formative Assessment						**50**
1	Sketching and building components for the assembly of a required 3D model using Solidworks	CLO1	R	Techincal essay	Grading rubric	30
2	Analyzing the characteristics of parts based on their chosen materials	CLO2	R	Techincal essay	Grading rubric	15
3	Working as a team to design and construct a 3D model of a device, proving responsibility and collaboration capability.	CLO3	R	Techincal essay	Grading rubric	5
Summative Assessment						**50**

4	Designing a medical device model on a computer, meeting technical standards and client's requirements.	CLO4	R	Techincal essay	Grading rubric	50

11. Learning Materials

– **Main reading:** Planchard, David C. Engineering Graphics with SolidWorks 2020: A Step-by-Step Approach Utilizing 3D Solid Modeling, SDC Publications, 2020.

– **Extra reading:** Keska, Pawel. SolidWorks 2021: Part Modeling, Assemblies, Drawings, CADvantage, 2021.

12. General Information

Academic Integrity

All students in this class are subject to HCMUTE's Academic Integrity Policy *(http://sao.hcmute.edu.vn/)* and should acquaint themselves with its content and requirements, including a strict prohibition against plagiarism. Any violations will be reported to the Faculty of Electrical and Electronic Engineering Dean's office.

Notice of Change

All information in this syllabus (other than grading and absence policies) may be subject to change with reasonable advanced notice. Students need to regularly update the information of their registered class.

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13. Approval Date:

14. Endorsement:

Dean of Faculty	Head of Department	Course Instructor
Assoc. Prof. Minh-Tam Nguyen	**Assoc. Prof. Thanh-Hai Nguyen**	

15. Revision History:

1st Revision:	
	Course Instructor

4	**Assoc. Prof. Thanh-Hai Nguyen** *Head of Department*
2nd Revision:	*Course Instructor* **Assoc. Prof. Thanh-Hai Nguyen** *Head of Department*