

Course Syllabus

A. COURSE INFORMATION AND TEACHING STAFF

1. Course	Name	COMPUTER-BASED PROSTHETIC AND ORTHOTIC DESIGN					
	Code	060213200					
	Activity	Lecture					
	Credit hours	2					
	Semester	Spring 2023/2024					
	Pre-requisite	No Pre-Requisite					
2. Teaching staff, time and location	Section	Building	Room	Day	Time	Instructor	Office hours
	1	ENG	004	T Th	13:00-13:50	Mariam Hisham Saber Shehada Mariam.Shehada@aaup.edu	

B. COURSE POLICIES

1. Commitment and Attendance	Attendance is required; and university regulations in this regard are strictly applied. It is important to note the following: - The student is expected to follow all announcements issued by the university, faculty, department as well as the course instructor through the official channels. It is the student's full responsibility to get aware of these announcements and to react accordingly. - The student has to communicate electronically with the course instructor, whenever needed, through the official channels exclusively which are limited to the AAUP email and Moodle messages only. - The student is expected to attend all classes* and to arrive at classroom on time. - If the instructor is late for class, the student must wait for at least 10 minutes before leaving the classroom. - Absence by more than 25% of classes leads to an automatic withdrawal from the course (the grade W is assigned).
2. Performance of assessment activities	The student must perform all course assessment activities, i.e. assignments, quizzes, exams etc. It is important to note the following: - Absence from an exam or a quiz other than the final exam leads to a zero mark in that exam or quiz. An exception allowing a makeup is made for a student submitting a legitimate excuse that is accepted by the instructor in a timely manner. - Absence from the final exam leads to an FA grade that eventually turns to an F grade. An exception allowing a makeup exam is made if the student submits an official excuse that is accepted by the Academic Affairs in compliance with the university regulations.

Course Syllabus

3. Academic Integrity

The student is expected to be honest during the performance of assessment activities. While not limited to the list below, the following actions are examples of cheating:

1. Copying from other students.
2. Using materials that are not authorized by the proctor during quizzes or exams.
3. Collaborating with other students during quizzes or exams.
4. Stealing or buying the content of exams, quizzes, and assignments.
5. Stealing ideas and work of others and presenting them as that of the student

4. Grading

The university uses the letter grading system. It is important to note the following:

1. The passing grade is D, and the corresponding score (out of 100) is determined at the end of the semester.
2. At the end of the semester, the scale of scores is determined by converting each

5. Learning and teaching methods

Lectures	Class sessions involve lectures, video shows, case studies, discussions, debates, and power-point presentations on topics and current issues related to the course contents.
Readings	This must be a key responsibility to each student. Students should read the relevant parts of the textbook and other materials before class. They should be prepared to raise questions and to get engaged in arguments on related topics in the class schedule.
In class learning activities	Students are encouraged to learn actively individually and cooperatively in groups. Students are expected to engage with the material, participate in the class, and collaborate with each other. Students will be asked to analyze an argument, demonstrate role play, discuss case studies, make presentations, or apply a concept to a real-world situation.
Outside class learning activities	The course instructor assigns projects and home assignments to students individually or in groups.
Feedback	The instructor provides the students with feedbacks on their performance throughout the course, which can help them to realize their weaknesses and work harder to improve their performance.
Online learning	Online learning platforms are utilized to provide students with additional resources as well as a continuous access to the course material beyond the classroom.

C. COURSE DETAILS

1. Course description & purpose

This course covers techniques of computer-aided patient measurement and device design and manufacture. It introduces students to computer application in designing the orthoses and protheses by means of CAD-CAM, 3D printing and some related software. Information technology is increasingly being used in the design and manufacture of prosthetic and orthotic devices and other rehabilitation equipments.

2. Course learning outcomes (CLOs)

	Upon the completion of the course, students will be able to achieve the following learning outcomes:
CLO1	Understand basics of CAD CAM: introduction, definition, history, current status, product cycle, automation, designing, application & benefits.

Course Syllabus

2. Course learning outcomes (CLOs)		Upon the completion of the course, students will be able to achieve the following learning outcomes:		
	CLO2	Explain the Scanners (theoretical and practical)		
	CLO3	Explain foundation of Rodin4D software.		
	CLO4	Explain Robot Master software		
	CLO5	Describe General steps of the process of 3D printing		
3. Assessments	Assessment tool	Weight %	CLOs	Due week
	Mid. Term	35%	1,2,3	
	Practical	25%	3	
	Final Exam	40%	1,2,3,4	
	Total	100%		

null

4. CLOs assessment	Outcomes	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
	1 - Mid. Term	✓	✓	✓		
	2 - Practical			✓		
	3 - Final Exam	✓	✓	✓	✓	

Course Syllabus

5. Course
schedule

Week	Topics	Study material	Assignment	CLOs
1	Basics of CAD CAM: introduction, definition, history, current status, product cycle, automation, designing, application & benefits.			1
2	Overview of 3D Printing			5
3	Introduction to Scanners			2
4	Introduction to MSOFT software (user guide – theory)			2
5	Introduction to MSOFT software (user guide – practical)			2
6	Using scanner (M4scan or structure sensor with iPad) of taking 3 D image for different parts of the body and shaping, cleaning, preparing to be moved to Modification software and simulation.			2
7	Introduction, foundation of Rodin4D commands, understanding 3D commands, executing 3D commands.			3
8	Continue with Rodin4D software, training on using Measurement and Area tools			3
9	Continue with Rodin4D software, training on using Modelling and Basic (Saw, Spade, Rasp, Plane and Eraser) tools			3
10	Continue with Rodin4D software, training on using Bend , Extrusion and Radius tools.			3
11	Continue with Rodin4D software, training on using, Twist , Elongation Balance , Shift and Clone tools.			3

Course Syllabus

5. Course schedule	Week	Topics	Study material	Assignment	CLOs
	12	Continue with Rodin4D software, training on using Filtering Area, Pilot, Folder tools and some advanced tools as Reflect and Mirror tools.			3
	13	Introduction to Robot Master software			4
	14	Practical: student has to be through in all branches CAD/CAM, student should make design 3 of all common types of P&O component which are regularly in use by using CAD/CAM software.			3
	15	Applying model to patient Assessment and revision			2,3,4
	16	Final Exam			1,2,3,4,5

D. COURSE MATERIAL

1. Textbook	THE 3D PRINTING HAND BOOK , Tony Fadell
2. Reference material	Computer aided design, computer aided manufacture and other computer aids in prosthetics and orthotics. Post-Processing Software User Guide-MSOFT Tanagra carving robot users guide MCX-Robotmaster 2020 – User manual
3. Internet resources	RODIN 4D WEBSITE, NEO ONLINE HELP, YOU TUBE VIDEOS