Course Syllabus

1	**Course title**	Clinical practicum in mechanical upper extremity prostheses	
2	**Course number**	1833345	
3	**Credit hours**	1 hour	Practical
	Contact hours (theory, practical)	4 hours per week	
4	**Prerequisites/corequisites**	1833311 or concurrent	
5	**Program title**	Bachelor of Science Degree in Orthotics and Prosthetics	
6	**Program code**	1803	
7	**Awarding institution**	The University of Jordan	
8	**School**	Rehabilitation Sciences	
9	**Department**	Orthotics and Prosthetics	
10	**Course level**	Undergraduate/ Third year	
11	**Year of study and semester (s)**	2025/2026, First semester	
12	**Other department (s) involved in teaching the course**	NA	
13	**Main teaching language**	English	
14	**Delivery method**	✓ ☐Face to face learning ☐Blended ☐Fully online	
15	**Online platforms(s)**	✓ ☐Moodle ☐Microsoft Teams ☐Skype ☐Zoom ☐Others……	
16	**Issuing/Revision Date**	28/9/2025	

17 Course Coordinator:

Name: Houshang Ranjbar Contact hours: Sunday 12:30 – 13:30

Office number: 529 Phone number: 5355000/ 23245

Email: h.ranjbar@ju.edu.jo

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18 Other instructors:

Name: Office number: Phone number: Email: Contact hours: Name: Office number: Phone number: Email: Contact hours:

19 Course Description:

The course will focus on the fabrication techniques of supracondylar socket for below elbow amputation that is commonly used for cosmetic and myoelectric prostheses. Then students will be then training on the processes of finalizing the cosmetic prostheses. The course will also introduce students to Utah dynamic socket and training in the prosthesis of its fabrication. Students will be then trained on manufacturing cosmetic prostheses for actual patients and evaluating their fit.

20 Course aims and outcomes: A- Aims:

1. To be able to use different upper limb prosthetic components based on understanding their basic functions.
2. To become familiar with technical aspects of different prosthetic components.
3. To obtain the practical skills to manufacture mechanical upper limb prostheses.

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

CILOs	JNQF	PILOs									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Recognize the alternative socket designs for different level of amputations.	***Knowledge***	***X***									
2. Using suitable and appropriate material and component for mechanical prosthetic fabrication.	Skills					***X***					
3. Ability to work with special machinery, equipment and tools.	Knowledge	***X***									
4. Developing skills in casting, molding, and lamination.	Knowledge		***X***								
5. Developing ability to arrange and adjust harness and control systems of the body powered control.	Competence							***X***			
6. Recognize possible adjustment to standard prosthetic designs based on the patient's needs.	Skills					***X***					
7. Recognize and follow the professional and ethical standards when dealing with patients.	Knowledge		***X***								
8. Showing ability to delivering high quality service for professional patients throughout the prosthetic fabrication.	Skills						***X***				
9. Amputee training to use mechanical prosthetic correctly.	Competence							***X***			
10. Demonstrate how to be fully engaged with the amputees and the importance of the clinical history in prosthetic decision-making.	Competence								***X***		

Program SLOs:

This classification aligns the PILOs with the respective criteria of knowledge, skills, and competencies based on the descriptions provided in the JNQF:

	O&P
Knowledge	1. Develop and integrate knowledge from foundational courses; including basic sciences, medical sciences, and research methods, to reflect on the practice of rehabilitation sciences. 2. Demonstrate knowledge of skills, techniques, therapeutic modalities, and contemporary trends in orthotic and prosthetic practice.
Skills	3. Apply the skills of managing health practice (i.e. prosthetics and orthotics) in different environments and for different patients. 4. Perform appropriate examinations and evaluations of patients, taking into account personal and environmental factors across diverse clinical settings. 5.Develop constructive methods for utilizing the appropriate equipment, materials, components, and technologies in constructing prosthetic and orthotic devices 6. Plan, develop, and implement treatment plans appropriate for each patient according to their age and needs within a broad and continuous series of necessary healthcare treatment plans.
Competencies	7.Compose effective oral and written communication for clinical and professional purposes including the use of information technology resources 8. Operate within interprofessional teams of healthcare providers, clients, communities, and organizations across traditional and emerging practices. While concurrently illustrating the qualities of a lifelong learner, apply ethical principles to promote inclusion, participation, safety, and wellbeing for all clients. 9. Apply leadership and management skills to advance Jordan and the global community scientifically, socially, and technologically in rehabilitation sciences. 10. Generate scientific research that advances rehabilitation practices locally and globally.

21. Topic Outline and Schedule:

Week	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	Introduction to Supracondylar prosthetic socket designs	1,3,6,7,8	Face to face	Mood	**Asynchronous Lecturing**	Written exam	E- learning
2	Patient assessment and BE casting	1,3,6,8	Face to face			Evaluation form	E- learning
3- 4	Modification of BE positive	1,2,3,5,7,8, 9	Face to face	Mood	**Asynchronous Lecturing**	Evaluation form	Rubric
5	First Check socket	3,5,6,7,9		Mood	**Asynchronous Lecturing**	Evaluation form	Rubric
	Second casting		Face to face				
6 -7	Modification of BE positive	2,3,5,6,7	Face to face			Evaluation form	Rubric
8 - 9	Lamination and forearm shell fabrication	3,5,6,	Face to face			Evaluation form	Rubric
10-11	BE prosthesis assembly	1,3,5,8,9,11	Face to face	Mood	**Asynchronous Lecturing**	Evaluation form	Rubric
12	Prosthesis fitting	1,2,3,5,7,8, 9	Face to face			Evaluation form	Rubric
13	BE Components and Harnessing	3,5,6,7,9	Face to face			Written exam	Rubric
14	Written exam	1,3,5,6,8,9, 11,12	Face to face	Mood	**Asynchronous Lecturing**	Written exam	Mood

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22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First project	**20**	(Assessment + BE Casting)	1,2,3,5,7, 8,9	4	Face to face
Mid exam	**30**	(Fabrication + Assembling)	3,5,6,8,9, 11	7,8, 9	Face to face
Final exam	**50**	(Fitting+ Harnessing + written exam)	1,3,5,6,8, 9,11,12	11, 12,13, 14	Face to face

23 Course Requirements

Lab coat

Copping (indelible) pencil

Retractable knife

Blind scissors

Tailor measuring tape

Marker pen

24 Course Policies:

- Attendance will be taken periodically throughout the semester.
- Students are expected to attend and actively participate in all classes.
- Students are expected to be on time.
- When the student is unable to attend class, it is a courtesy to notify the instructor in advance using either e-mail.
- Repeated tardiness or leaving early will not be accepted.
- Students who miss class (or any portion of class) are responsible for the content. Any student who misses a class has the responsibility for obtaining copies of notes, handouts, assignments, etc. from class members who were present. If additional assistance is still necessary, an appointment should be scheduled with the instructor. Class time is not to be used to go over material with students who missed class(es).

- An absence of more than 15% of all the number of classes, which is equivalent of (2) classes, requires that the student provides an official excuse to the instructor and the dean.
- If the excuse was accepted the student is required to withdraw from the module.
- If the excuse was rejected the student will fail the module and mark of zero will be assigned as suggested by the laws and regulations of the University of Jordan. Please refer to pages 133, 134 of the student handbook.

B- Absences from exams and handing in assignments on time:

- The instructor will not do any make-up exams.
- Exceptions for make-up exams and late submission of class assignments will be made on a case-by-case basis for true personal emergencies that are described as accepted by the regulations of UJ (e.g., documented medical, personal, or family emergency).
- Make-up exams will be arranged if justifications for missing the exam satisfy the above. It is the student's responsibility to contact the instructor within 24 hours of the original exam to schedule a make-up session. A make-up exam should be taken within a week from the original exam date, unless the student can provide documentation that makes meeting that deadline impossible; otherwise, the recorded score for that exam for the student will be a zero.
- Late assignments will not be accepted and submission of assignments (due to unjustified absence from class) by other students will not be accepted regardless of how much work the student put into its preparation.

C- Health and safety procedures:

- Students will be in direct contact with patients during this course.
- Students are expected to use any heavy tools or equipment that might impose health and safety issues during this course.
- Students should work safely, including being able to select appropriate hazard control and risk management, reduction or elimination techniques in a safe manner in accordance with health and safety legislation.
- Students should understand the importance of and be able to maintain confidentiality.
- Students should understand the importance of and be able to obtain informed consent.
- Students should know the limits of their practice and when to seek advice or refer to another professional

D- Honesty policy regarding cheating, plagiarism, misbehavior:

- Students are expected to observe all University guidelines pertaining to academic misconduct.
- Any work submitted by a student for academic credit must be the student's own work. Submission of work taken directly from another source (e.g., book, journal, internet, clinic forms, or another student work) will be considered plagiarism and the student/group will get a zero grade for that work if part of an assignment. In addition, if copying occurred, both the student who copied the work and the student who gave material to be copied (if applicable) will receive a zero for the assignment.
- Students are expected to do work required for assignments on their own. Asking other instructors at the

JU clinic or the staff, or other students to assist in or do any part of the assignment for them will negatively affect their grade on that assignment. The course instructor is the person the student needs to talk to if s/he has any difficulties pertaining to an assignment or project and is strongly encouraged to schedule an appointment with the instructor if such difficulties arise during the semester.

- Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited.
- Any forms of academic misconduct will be handled according to the University of Jordan guidelines.

E- Grading policy:

Grading for this course will be determined based upon the accumulation of points for variety of assignments and exams. All work will be evaluated on completeness, organization, clarity of information, and the integration and application of the material.

F-Available university services that support achievement in the course:

The University of Jordan provides many services to support social, health, and mental well-being of students in general and students with disabilities in specific. Students are advised to visit the Faculty of Students Affairs to learn more about those services. If you are a student with a disability for which you may request accommodations, please notify the staff of Services for Student with Disabilities (Faculty of Students Affairs) as soon as possible. Please also contact the instructor as soon as possible (email is acceptable) so the appropriate accommodations for this course can be made.

25 References:

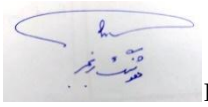
A- Required book(s), assigned reading and audio-visuals: checking the E- learning (Mood) weekly

B- Recommended books, materials, and media:

1- Otto Bock standards for upper limb extremity prosthetic fabrication for Utah dynamic socket

26 Additional information:

Students will not be allowed to enter the workshop without being well equipped and wearing their lab coats!

Name of Course Coordinator: Houshang Ranjbar Signature:  Date: 28/9/2025
Head of Curriculum Committee/Department: Dr. Mahmoud Fataftah Signature : MF
Head of Department: Dr. Mahmoud Fataftah Signature:
Head of Curriculum Committee/Faculty: --Lara Khlaift------ Signature: LK
Dean: --Lara Khlaift------ Signature: LK

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Rubric

Clinical practicum in Mechanical Upper extremity prosthetics

(Project 1 – (Assessment + Casting) 30 marks)

No	Name	Assessment 10%					Measurements & Casting 20%									Total 30 %
		S. History 1	G. Physical Assessment 2	ROM 2	MMT 1	Treatment Planning (Rx Qty 1	Splint shape 2	Splint applying 2	Casting angle Hand position 4	Wrapping 2	Casting coverage 2	Force Applying 2	Negative removing 2	Strength 2	Negative trimline 2	Total 30%
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																

Assessment 10 marks

Subjective History 1mark

If there is no any recorded history = 0

General Physical Assessment 2 marks

Any students should do the all necessarily tests to have complete assessment and find any things may change the prosthetic intervention. Focus should be on following:

Stability of any involved joints

Painful or sensitive areas

Limitation, contractures or deformity of joints

For any missing test or incorrect application, you can decrease one mark.

Range of Motion 2marks

Aim of this test is finding of ability of patient to do active motion, any available limitations or contractures in amputated side and

unamputated side. So, for any missing test or incorrect application, you can decrease one mark.

Muscle Strength 1marks

Aim of this test is finding of any available limitations, weaknesses and contractures in affected side, unaffected side and also upper limbs. So, for any missing test or incorrect application, you can decrease one mark.

Treatment Planning (P&O) 4 marks

According to collected information any student should be choose the type of prosthesis, size of hand and cosmetic glove, length of the prosthesis and forearm shell.

For any missed measurement you can decrease one mark.

Measurements & Casting 20 marks

Splint shape 2

Any student should prepare the proximal splint correctly in size and shape. (0 or 2)

Splint Applying 2

Any student should put the splint in correct position and smooth it very fast. (0 or 2)

Casting angle (Hand position) 4marks

Casting should be done in correct way and professional manner so they should save the joint in appropriate position and try to do not change the original shape of limb. Elbow position (50 – 70 flexion., according to the stump length) (0 or 2)

Forearm in mid position (0 or 2)

Wrapping 2

They should wrap the plaster diagonally or in figure of 8 manner to covering the end of stump and avoiding of collecting of plaster in elbow area. (Circular wrapping 0)

Casting coverage & tension 2 marks

Plaster should cover the involved limb length smoothly and completely without any opening and weak area.

If there is any opening or weak areas or uncompleted coverage or excessive thickness = 0

Force applying 2

They should apply the enough force exactly above the humerus epicondyles and a little forward. incorrect place or amount = 0

Negative removing 2

Students should cut the proximal brim with scissures and remove the negative easily. (0 or 2)

Strength 2

Negative mold should be enough strength to save the shape of stump. (0 or 2)

Negative trimline 2

Short or long trimlines = 0

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Clinical practicum in Mechanical Upper extremity prosthetics

(Project 2 – (Fabrication + Assembling) 25 marks)

No	Name	Fabrication 6			Assembling 14						Total 20
					Socket trim lines		Forearm shell				
		Use of Materials 2	Timings 2	Clean up 2	Smoothness 2	Symmetry 3	Length 3	Shape 2	Direction 3	Connection 1	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

Fabrication 6 marks

Use of Materials 2 marks

Wasting of materials (Plaster bandage, sealing resin, lamination resin and ...) every time result to loosing (1) mark.

Timings 2 marks

They should complete any parts of working during expected time.

Assembling 15 marks

Socket trimlines 5 marks

If there is any sharp edge, smoothness = 0

If any wall of socket is not symmetrical or short or high you can decrease one mark.

Forearm shell 9 marks

Length 3 (3 or 0), **Shape** (2 or 0), **Direction** of forearm flexion (3 or 0), **Connection** (position of lamination ring) (1 or 0)

Clinical practicum in Mechanical Upper extremity prosthetics

(Project 3 – (Fitting + Harness) 25 marks)

	Fitting 20								Harness 5		Total 25
	Don& doff 2	Pain or redness 2	Proximal trim line 2	ROM with Pr.2	Total contact 5	Rotational stability 2	Socket grip 3	End relief 2	Adjustment 3	TD activation 2	

Fitting 20 marks

Donning & doffing 2 marks

Amputee should wear the prosthesis easily. (0 – 2)

Pain or redness 2 marks

Socket should be fit and comfort for amputee, without any redness or pain. If there is excessive pressure or pain = 0

Proximal trim lines 2 marks

Check the proximal trimlines any wall should have correct height.

ROM with prosthesis 2 marks

If there is limitation in ROM? Less than 90 =0, 90 =1 and more than 90 = 2

Total contact 5 marks

The stump should have total contact with any parts of socket, for any markable gap reduce one mark.

Rotational stability 2

If stump can rotate inside the socket = 0

Suspension 3 marks

Good grip =3, A little pistoning motion = 1, Not enough suspension = 0

End relief 2 marks

If there is no relief and there is pain in the end of stump = 0

Harness system 5 marks

Adjustment 3 marks

Any student should be able to adjust the components of harness and make it fit otherwise = 0

TD activation 2 marks

Full opening of TD = 2

(Assessment + Casting) 20 marks) + (Check socket) 20 marks) + (Fabrication + Assembling) 20 marks) + (Fitting + TD activation) 25 marks) + written exam 15 = 100