



Ministry of Higher Education and Scientific Research -
Iraq
Al-Mustaqbal University
College of Engineering
Department of Prosthetics and Orthotics Engineering



MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	الأطراف الصناعية III		Module Delivery
Module Type	CORE		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UOMU0103061		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	
Administering Department	UOMU0103	College	UOMU01
Module Leader	Muntadher Saleh Mahdi	e-mail	muntadher.saleh.mahdi@uomus.edu.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	MSc.
Module Tutor			
Peer Reviewer Name		e-mail	
Review Committee Approval	01/09/2025	Version Number	1.0

Relation With Other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Biomechanics and rehabilitation	Semester	4, 5 and 6
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Define immobilization, mobilization, and restriction orthoses and give examples of orthoses in each category. 2. Explain the differences among static, dynamic, serial static, and static progressive orthoses and discuss which may be appropriate at each of the three wound healing stages. 3. Identify the three arches of the hand along with creases and discuss their significance. 4. Identify a 90-degree angle of pull and explain its importance in the application of force. 5. Describe the various handling and physical characteristics of thermoplastic materials and discuss how they affect orthotic fabrication. 6. Explain the importance of patient education related to proper orthosis wear, care, and precautions. 7. Discuss the incidence and prevalence of high-level and bilateral lower-limb amputations. 8. Describe the etiology of high-level and bilateral lowerlimb amputations. 9. Identify the two primary biomechanical limitations of hip disarticulation and higher-level prostheses. 10. Estimate the relative energy cost of ambulation with highlevel or bilateral limb loss. 11. Describe the prosthetic and rehabilitation needs for persons with high-level and bilateral lower-limb amputation 12. . Compare and contrast prosthetic needs and expected functional outcomes for individuals with upper-extremity amputations at various levels. 13. Compare and contrast the fitting and control issues for individuals with various etiologies of amputations and residual limb lengths. 14. Describe the factors that determine recommendations for prosthetic options (no prosthesis, passive prosthesis, body-powered prosthesis, externally powered systems, or hybrid prosthetic systems). 15. Compare and contrast options for donning and suspension of a prosthesis for individuals with upper-extremity amputations of various levels. 16. Describe the biomechanical principles of transradial and transhumeral body-powered prosthetic control systems and the movement strategies necessary
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	<p>for control of electric terminal devices (TDs), elbow units, and other prosthetic components.</p> <p>Explain the basic principles of myoelectric control, including determining electrode placement and the types of muscle contractions used to operate or switch among TDs, electric elbow units, and other electric prosthetic components</p>
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Understand the prosthetic options available for individuals with high-level and bilateral lower-limb amputation. 2. Identify the principles and biomechanics involved in choosing prosthetic components, including foot, knee, and hip joint selection. 3. Explain the design descriptors and different socket designs for trans-femoral and transtibial amputations. 4. Describe the various types of orthoses used in the management of hand dysfunction, including articular and non-articular orthoses. 5. Analyze the use of static and dynamic orthoses for upper-extremity amputation and the objectives for orthotic intervention. 6. Evaluate the impact of residual limb length on prosthetic fitting and design considerations. 7. Examine mechanical principles such as levers, stress, angle of force application, and force application in upper-extremity prosthetic components. 8. Understand the use of adaptive seating in managing neuromuscular and musculoskeletal impairment. 9. Compare different prosthetic options, including no prosthesis, passive prostheses, and restorations. 10. Explain the role of orthoses in managing hip dysfunction and understand the hip's structure and function. 11. Discuss conventional body-powered systems, figure-of-eight suspension, control cables, and their applications in prosthetics. 12. Understand the incidence, etiology, and early orthotic management of developmental dysplasia of the hip in infants and children. 13. Analyze cable control, suspension methods, and socket configurations for bilateral and transradial prostheses. 14. Describe the management of the adult hip, including total hip arthroplasty and post-trauma care. 15. Explore terminal devices for conventional prostheses and the use of self-suspending sockets. <p>Perform a seating and mobility assessment and evaluate seating and mobility outcomes.</p>
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>By providing a supportive and interactive learning environment, students will have the opportunity to apply theoretical concepts to real-world scenarios, enhancing their comprehension and practical skills. The module will encourage students to analyze and evaluate information, participate in discussions, and collaborate with peers to deepen their understanding of prosthetics and orthotics.</p> <p>The teaching methods employed will include lectures, group discussions, case studies, and practical demonstrations. Additionally, technological tools and resources may be utilized to enhance the learning experience, such as multimedia presentations, virtual simulations, and online resources.</p> <p>Formative assessments and feedback will be integral components of the module, allowing students to continuously monitor their progress and identify areas for improvement. This approach will empower students to take an active role in their learning, fostering a sense of ownership and motivation.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	13	LO # 5, 8 and 10
	Report	2hr.	10% (10)	7	LO # 1-7
Summative assessment	Midterm Exam	3hr	60% (60)	16	All
	Final Exam	2	10% (10)	5, 10	LO #1, 2, 10 and 11
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Prosthetic Options For Persons With High-Level And Bilateral Lower-Limb Amputation
Week 2	Biomechanics
Week 3	Component Selection, Choosing A Prosthetic Foot, Choosing A Prosthetic Knee Unit, Choosing A Prosthetic Hip Joint
Week 4	Socket Design
Week 5	Transfemoral–Transtibial Amputation, Socket Designs and Suspension
Week 6	Prosthetic Options for Persons with Upper-Extremity Amputation
Week 7	Length Of the Residual Limb
Week 8	UPPER-EXTREMITY PROSTHETIC COMPONENT, Partial Hand, Transcarpal, And Wrist Disarticulation
Week 9	Transradial And Transhumeral Considerations
Week 10	PROSTHETIC OPTIONS, No Prosthesis, Passive Protheses And Restorations
Week 11	Conventional Body-Powered Systems, Figure-Of-Eight Suspension and Control Cabl
Week 12	Cable Control for Self-Suspending Sockets, Control and Suspension For Bilateral Protheses, Triceps Cuff In Conventional Transradial Prosthesis
Week 13	Cables And Cable Housings
Week 14	Terminal Devices For Conventional Protheses, Socket Configurations, Socket Transradial Self-Suspending Sockets
Week 15	Decision Making, Myoelectric Control Systems, Electric Terminal Devices, Electric Elbow Components, Hybrid Protheses

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. ORTHOTICS & PROSTHETICS IN REHABILITATION, THIRD EDITION 978-1-4377-1936-9 Copyright © 2013, 2007, 2000 by Saunders, an imprint of Elsevier . Short Textbook of Prosthetics and Orthotics, R hinnathurai, 2010	No
Recommended Texts	essentials of Prosthetics and Orthotics with MCQs and Disability Assessment Guidelines	No
Websites	https://www.coursera.org/search?query=material%20science	

APPENDIX:

GRADING SCHEME				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C –Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
<p>Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي