

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Therapeutic Instrumentation I		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☐ Seminar
Module Code	MIET4101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGIV	Semester of Delivery	
Administering Department	MIET	College	Faculty of Engineering Techniques
Module Leader	Ali Tawfeek	e-mail	Ali_Tawfeek@gmail.com
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor			
Peer Reviewer Name	Ali Tawfeek	e-mail	Ali_Tawfeek@gmail.com
Scientific Committee Approval Date	22/3/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Anatomy & Physiology _ MIET2105	Semester	UGII -S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduated students will acquire the theoretical concepts behind medical therapeutic instruments. 2. The graduates get the scientific and applied skills to diagnosis the medical therapeutic instruments faults. 3. The graduated students will gain the necessary knowledge about different parts of medical therapeutic instruments. 4. Development and training the engineering technical staff on the medical therapeutic instruments maintenance. 5. Preparation of the research and studies to improve and develop the medical therapeutic instruments 6. Put the proposals and alternatives for the medical therapeutic instruments.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the importance of surgeries in human medical therapy. 2. Get the basic knowledge about the medical instruments used in operating room. 3. Understand the concept behind the surgical diathermy. 4. Identify the parts of the surgical diathermy instrument and recognize its faults and the methods of maintenance. 5. Understand the working principle of Dental chair. 6. Identify the parts of the Dental chair and recognize its faults and the methods of maintenance. 7. Understand the concept behind the ophthalmic microsurgical instruments. 8. Identify the parts of the ophthalmic microsurgical instrument and recognize its faults and the methods of maintenance. 9. Understand the working principle of heart-lung machine. 10. Identify the parts of the heart-lung machine and recognize its faults and the methods of maintenance. 11. Understand the concept behind the Hemodialysis machine. 12. Identify the parts of the hemodialysis machine and recognize its faults and the methods of maintenance. 13. Understand the working principle of Therapeutic diathermy instruments. 14. Identify the parts of the therapeutic diathermy instruments and recognize its faults and the methods of maintenance.
Indicative Contents المحتويات الإرشادية	General systems and specialized tools in general surgery [9 hrs]. Surgical diathermy, cautery [8 hrs]. Dental chair [10 hrs]. Ophthalmic microsurgical Inst. [9 hrs]. Heart – lung machine [10 hrs]. Hemodialysis machine [9 hrs]. Therapeutic Diathermy [12 hrs].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. Moreover, motivate the creative side by posing various problems to students and urging them to find appropriate solutions. Also forming work teams to assess the results of their work and change their structure periodically to develop the spirit of cooperation and development and motivate students to make intensive efforts to work different roles.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	5, 10	LO #1, 2, 3, 4,8,9 and 10
	Assignments	1	5% (5)	8	LO #5, 8
	Projects / Lab.	8	15% (15)	Continuous	All
	Report	1	5% (5)	13	LO # 3,5, 7,9 and 11
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-6
	Final Exam	4 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	General systems and specialized tools in general surgery I
Week 2	General systems and specialized tools in general surgery II
Week 3	Surgical diathermy, cautery I
Week 4	Surgical diathermy, cautery II
Week 5	Dental chair I
Week 6	Dental chair II
Week 7	Mid-Term Exam
Week 8	Ophthalmic microsurgical Inst. I
Week 9	Ophthalmic microsurgical Inst. II
Week 10	Heart – lung machine I
Week 11	Heart – lung machine II
Week 12	Hemodialysis machine I
Week 13	Hemodialysis machine II
Week 14	Therapeutic Diathermy I
Week 15	Therapeutic Diathermy II Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	General systems and specialized tools in general surgery I
Week 2	General systems and specialized tools in general surgery II
Week 3	Surgical diathermy, cautery I
Week 4	Surgical diathermy, cautery II
Week 5	Dental chair I
Week 6	Dental chair II
Week 7	Ophthalmic microsurgical Inst. I
Week 8	Ophthalmic microsurgical Inst. II

Week 9	Heart – lung machine I
Week 10	Heart – lung machine II
Week 11	Hemodialysis machine I
Week 12	Hemodialysis machine II
Week 13	Therapeutic Diathermy I
Week 14	Therapeutic Diathermy II

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Webster, John G., ed. <i>medical instrumentation: application and design</i> . John Wiley & Sons, 2009.	yes
Recommended Texts	J.D.Bronzino ,Biomedical Engineering Handbook	
Websites		

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	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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.

د.د. هارون عبد الكاظم شهد
المعيد

عميد الكلية : أ.د. هارون عبد الكاظم شهد

التاريخ : 2026 / 3 / 22

رئيس القسم : أ.د. محمود شاكر نصر

التاريخ : 2026 / 3 / 22

اسم التدريسي: م.م علي توفيق لطيف

التاريخ : 2026 / 3 / 22