

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Laboratory Medical Instrumentation II		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	UOMU024041		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGII	Semester of Delivery	
Administering Department	MIET	College	EETC
Module Leader		e-mail	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	None	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	19/11/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Laboratory Medical Instrumentation I	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. The graduate get scientific and applied skills to diagnosis the medical instruments faults.</li> <li>2. The graduated students will gain the ability of knowledge of different parts of medical instruments.</li> <li>3. Development and training the engineering technical staffs on the medical device maintenance.</li> <li>4. Preparation of the research and studies to improve and develop the action of medical devices.</li> <li>5. Put the proposals and alternatives for the medical devices.</li> <li>6. To describe the types of laboratory medical instruments.</li> <li>7. To explain the principal work of the laboratory medical devices techniques.</li> <li>8. To understand the maintenance of laboratory medical devices and their electrical and mechanical faults.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon completion of the course, students should be able to:</p> <ol style="list-style-type: none"> <li>1. Introduction about the laboratory Design, Rules and limitations.</li> <li>2. Define, explain, and describe the centrifuge and understand the electrical and electronic parts.</li> <li>3. Define, explain, and describe Microscope and understand the electrical and electronic parts.</li> <li>4. List and recognize the types of microscopes.</li> <li>5. Define, explain, and describe Polymerase chain reaction (PCR). and understand the electrical and electronic parts.</li> <li>6. Definition of Laboratory incubators and explain their applications.</li> <li>7. List and understand the types of Laboratory Incubators.</li> <li>8. Define and explain Oven and its medical application.</li> <li>9. Define and explain Autoclave and its medical application.</li> <li>10. Describe and understand water distillation and its application with the medical field.</li> <li>11. Definition and understanding of the CBC System.</li> <li>12. Define the principle of CBC Medical system.</li> <li>13. Faults and maintenance of medical instrumentations</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <p>Medical instrumentation definition, analysis lists, work security rules, and best laboratory use guidelines [14hr].</p> <p>Laboratory instruments criteria, types, components, advantages and disadvantages, physical and medical application. [12hr].</p> <p>Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14 hr].</p>

	<p>Explain Polymerase chain reaction (pcr)and definition of Laboratory incubators[14 hr].</p> <p>Types of Laboratory Incubators and oven and its medical application[14hr].</p> <p>Autoclave medical application and water distillation[14hr].</p>
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<b>Learning and Teaching Strategies</b> <b>استراتيجيات التعلم والتعليم</b>	
<b>Strategies</b>	<p>The main strategy that will be adopted in delivering this module is to encourage students' participation in the design, while at the same time refining and expanding their medical instrumentations thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>

<b>Student Workload (SWL)</b> <b>الحمل الدراسي للطالب</b>			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	175		

<b>Module Evaluation</b> <b>تقييم المادة الدراسية</b>				
	<b>Time/Number</b>	<b>Weight (Marks)</b>	<b>Week Due</b>	<b>Relevant Learning Outcome</b>

<b>Formative assessment</b>	<b>Quizzes</b>	2	% (10)	3,10	LO # 1,2,3.....14 ,
	<b>Assignments</b>	2	% (10)	4,8	LO # 6,13
	<b>Projects / Lab.</b>	1	%(10)	6	LO #3
	<b>Report</b>	2	% (10)	5,9	LO # 7,12
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	7	LO # 1-7
	<b>Final Exam</b>	3hr	50% (50)	14	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Introduction about the laboratory Design.
<b>Week2</b>	Definition of Centrifuge
<b>Week 3</b>	Applications of Centrifuge
<b>Week 4</b>	Definition of Microscopes.
<b>Week 5</b>	Types of Microscopes.
<b>Week 6</b>	Water distillation
<b>Week7</b>	Mid Term exam
<b>Week 8</b>	Oven and its medical application.
<b>Week 9</b>	Autoclave and its medical application.
<b>Week 10</b>	Definition of Laboratory incubators.
<b>Week 11</b>	Types of Laboratory Incubators.
<b>Week 12</b>	Polymerase chain reaction (PCR).
<b>Week 13</b>	Applications of (PCR)
<b>Week 14</b>	Definition of Complete Blood Counter (CBC) Principle of (CBC)
<b>Week 15</b>	A preparatory week before final exam.

<b>Delivery Plan (Weekly Lab. Syllabus)</b> المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 1</b>	Introduction about the laboratory Design
<b>Week 2</b>	Centrifuge

<b>Week 3</b>	Microscopes.
<b>Week 4</b>	Types of Microscopes.
<b>Week 5</b>	Water distillation
<b>Week6</b>	Oven and its medical application.
<b>Week7</b>	Autoclave and its medical application.
<b>Week 8</b>	Laboratory Incubators.
<b>Week 9</b>	Polymerase chain reaction (PCR).
<b>Week10</b>	Complete Blood Counter (CBC)
<b>Week11</b>	Faults and maintenance of medical lab. instruments

<b>Learning and Teaching Resources</b> مصادر التعلم والتدريس		
	<b>Text</b>	<b>Available in the Library?</b>
<b>Required Texts</b>	Biomedical device technology ,by ANTHONY Y. K. CHAN, MSc, MEng, PEng, CCE	
<b>Recommended Texts</b>	Ananthi ,2005,"A text book of medical instruments	
<b>Websites</b>		

<b>Grading Scheme</b> مخطط الدرجات				
<b>Group</b>	<b>Grade</b>	<b>التقدير</b>	<b>Marks (%)</b>	<b>Definition</b>
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 – 49)</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	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.