

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Medical Communication systems	Module Delivery	
Module Type	Core	<input checked="" type="checkbox"/> Theory	
Module Code	UOMU0204063	<input type="checkbox"/> Lecture	
ECTS Credits	5	<input checked="" type="checkbox"/> Lab	
SWL (hr/sem)	125	<input type="checkbox"/> Tutorial	
		<input type="checkbox"/> Practical	
		<input type="checkbox"/> Seminar	
Module Level	UGIII	Semester of Delivery	6
Administering Department	MIET	College	EETC
Module Leader	Dr. Osama Jaber Ghaieb	e-mail	osamah.jaber.ghayyib@uomus.edu.iq
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	MSc
Module Tutor		e-mail	
Peer Reviewer Name	Dr. Osama Jaber Ghaieb	e-mail	osamah.jaber.ghayyib@uomus.edu.iq
Scientific Committee Approval Date	8/11/2023	Version Number	1

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Signals and systems	Semester	UGIII-S5
Co-requisites module		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. To learn the types of digital and analog modulation</li> <li>2. To distinguishes the difference between digital and analogue modulation</li> <li>3. To learn the types of impulse modulation.</li> <li>4. To learn spread spectrum systems</li> <li>5. To learn the biomedical sensor network</li> <li>6. To learn mobile communications (3G / 4G)</li> <li>7. To learn telemedicine and healthcare systems</li> <li>8. To learn the Internet of Things in medical applications</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Understand and mitigate noise in communication systems.</li> <li>2. Master the basics of sampling.</li> <li>3. The student learns the types of digital and analog modulation.</li> <li>4. The student distinguishes the difference between digital and analogue modulation.</li> <li>5. The student learns the types of impulse modulation.</li> <li>6. The student learns spread spectrum systems</li> <li>7. The student learns the biomedical sensor networks.</li> <li>8. Learn wireless sensor networks.</li> <li>9. The student learns mobile communications (3G / 4G)</li> <li>10. The student learns telemedicine and healthcare systems</li> <li>11. The student learns the Internet of Things in medical applications</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ol style="list-style-type: none"> <li>1. Communication System and types <b>[4 H]</b>.</li> <li>2. AM and Fm modulation system and types and examples <b>[4 H]</b>.</li> <li>3. Sampling, PAM, PWM, PPM, and PCM and examples <b>[10 H]</b>.</li> <li>4. Digital Modulation Techniques, ASK, FSK, and PSK examples <b>[8 H]</b>.</li> <li>5. Spread Spectrum Systems, Wireless Sensor Network, Biomedical Sensor Network, and Mobile Communication (3G/4G) and examples <b>[20 H]</b>.</li> <li>6. Telemedicine and Health care Systems, IoT in Medical Applications and examples <b>[8 H]</b>.</li> </ol>

## Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Lectures - means of clarification - intellectual questions - scientific exhibitions - scientific competitions</p>
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<b>Student Workload (SWL)</b> الحمل الدراسي للطالب			
<b>Structured SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	64	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعياً	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
<b>Total SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	125		

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	4	10 %(10)	4, 8, 12, 14	LO # 1, 2, 3 LO # 4, 5, 6. LO # 7, 8, 9. LO # 10, 11
	<b>Assignments</b>	2	10 %(10)	5,13	LO # 1-4, and 5-11
	<b>Projects / Lab.</b>	2	10 %(10)	Continuous	
	<b>Report</b>	14	10 %(10)	14	LO # 1-11
<b>Summative assessment</b>	<b>Midterm Exam</b>	2h	10 %(10)	7	LO # 1-6
	<b>Final Exam</b>	4h	50 %(50)	16	ALL
<b>Total assessment</b>			100 %(100)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الأسبوعي النظري	
	Material Covered
<b>Week 1</b>	Noise in Communication Systems
<b>Week 2-3</b>	Sampling, PAM, PWM, PPM, and PCM
<b>Week 4-5</b>	Digital Modulation Techniques
<b>Week 6</b>	Spread Spectrum Systems

<b>Week 7</b>	Mid-Exam
<b>Week 8</b>	Wireless Sensor Network
<b>Week 9-10</b>	Biomedical Sensor Network
<b>Week 11-12</b>	Mobile Communication (3G/4G)
<b>Week 13</b>	Telemedicine and Health care Systems
<b>Week 14</b>	IoT in Medical Applications
<b>Week 15</b>	Preparing for final exam

<b>Delivery Plan (Weekly Lab. Syllabus)</b>	
المنهاج الاسبوعي للمختبر	
	<b>Material Covered</b>
<b>Week 1-2</b>	Amplitude Modulation large carrier and Amplitude Modulation suppressed carrier
<b>Week 3</b>	Frequency Modulation
<b>Week 4</b>	Amplitude Demodulation
<b>Week 5</b>	PAM
<b>Week 6</b>	PWM
<b>Week 7</b>	PPM
<b>Week 8</b>	ASK
<b>Week 9</b>	FSK
<b>Week 10</b>	PWM
<b>Week 11</b>	BPSK
<b>Week 12</b>	Biomedical Sensor Network
<b>Week 13</b>	Telemedicine and Health care Systems
<b>Week 14</b>	IoT in Medical Applications

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Introduction to Communication Systems	NO
Recommended Texts	Introduction to Communication Systems (second edition- by Ferrel. G. Stremmer)	YES
Websites	<ol style="list-style-type: none"> <li>1. <a href="https://www.coursera.org/search?query=Electromagnetic%20Fields&amp;=null&amp;index=prod_all_launched_products_term_optimization">https://www.coursera.org/search?query=Electromagnetic%20Fields&amp;=null&amp;index=prod_all_launched_products_term_optimization</a>.</li> <li>2. <a href="http://www.tallguide.com">www.tallguide.com</a></li> <li>3. <a href="http://www.ainfoinc.com">www.ainfoinc.com</a></li> <li>4. <a href="http://www.millitech.com">www.millitech.com</a></li> <li>5. <a href="http://www.rfcafe.com">www.rfcafe.com</a></li> <li>6. <a href="http://www.globalspec.com">www.globalspec.com</a></li> </ol>	

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 (فيد 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.