	Ministry of Higher Education and Scientific Research - Iraq University of Technology Biomedical Engineering Department	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Introduction of Biomedical Engineering I			Module Delivery	
Module Type	E			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	INBE111				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGx11 1		Semester of Delivery	1	
Administering Department	Type Dept. Code		College	Type College Code	
Module Leader	Name		e-mail	E-mail	
Module Leader's Acad. Title	Professor		Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023		Version Number	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	

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. 1. This course aims to give an introductory overview of how to build an engineer specialized in biomedical engineering by describing the academic inputs and showing the relationship between engineering, medical and biological sciences on the one hand and their cross-fertilization with administrative and legal knowledges and skills on the other. 2. Describe the scope of the sub-specialization by showing the subtle branches of the specialization and showing the size of the relationship between them and other engineering disciplines and the extent to which any of them are used to solve a medical problem at the level of diagnosis, treatment or medical rehabilitation. 3. Completing the final vision of the life medicine engineer's performance by reviewing the professional and functional capabilities that the specialization entitles to its members as the logical outputs of this specialization.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student will be able to understand the scope of work of biomedical engineering as an engineering discipline and to know its engineering size and its relationship with medical and biological sciences. 2. The student will be able to know the jobs and duties that he can perform after graduation 3. The student will get acquainted with the administrative, legal and life knowledge and skills that accompany the basic sciences of the specialization in order to shape his personality in the labor market.
Indicative Contents المحتويات الإرشادية	1. Health Care System [1hr] 2. Definitions of Biomedical Engineering [1hr] 3. Disciplines of Biomedical Engineering [1hr] 4. Biomedical Engineering Focusing and LEARNNING[1hr] 5. HISTORICAL PERSPECTIVE of BIOMEDICAL ENGINEERING. [1hr] 6. Introduction to the MORAL AND ETHICAL ISSUES**[1hr]** 7. CAREER OPPORTUNITIES of Biomedical Engineering[3hr] 8. Introduction to ANATOMY AND PHYSIOLOGY**[1.5hr]** 9. Introduction to BIOMECHANICS **[1.5hr]**

	10. Introduction to REHABILITATION ENGINEERING ANDASSISTIVE TECHNOLOGY **[1.5hr]** 11. Introduction to BIOMATERIALS **[1.5hr]** 12. Introduction to TISSUE ENGINEERING **[3hr]** 13. Introduction to BIOINSTRUMENTATION **[3hr]** 14. Introduction to BIOMEDICAL SENSORS **[3hr]** 15. Introduction to BIOSIGNAL PROCESSING **[3hr]** 16. Introduction to BIOELECTRIC PHENOMENA **[3hr]** 17. Introduction to PHYSIOLOGICAL MODELING [3hr] 18. Introduction to GENOMICS AND BIOINFORMATICS **[3hr]** 19. Introduction to COMPUTATIONAL CELL BIOLOGY AND COMPLEXITY **[3hr]** 20. Introduction to RADIATION IMAGING **[3hr]** 21. Introduction to MEDICAL IMAGING **[3hr]** 22. Introduction to BIOMEDICAL OPTICS AND LASER **[3hr]**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This course seeks to give an idea of the biomedical engineering major, so practical examples from the labor market will accompany the descriptive narration of the vocabulary. The lectures will be interactive in a role-playing manner, and each case will be adopted directly by the students, especially at the stage of describing the specializations of biomedical engineering and describing and understanding the jobs in which the specialization personnel work after graduation.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

As		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)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Health Care System Definitions of Biomedical Engineering Disciplines of Biomedical Engineering
Week 2	Biomedical Engineering Focusing and LEARNNING HISTORICAL PERSPECTIVE of BIOMEDICAL ENGINEERING. MORAL AND ETHICAL ISSUES
Week 3	CAREER OPPORTUNITIES of Biomedical Engineering
Week 4	Introduction to BIOMATERIALS Introduction to BIOMECHANICS
Week 5	Introduction to TISSUE ENGINEERING Introduction to REHABILITATION ENGINEERING ANDASSISTIVE TECHNOLOGY
Week 6	Introduction to BIOINSTRUMENTATION
Week 7	Introduction to BIOMEDICAL SENSORS

Week 8	Introduction to BIOSIGNAL PROCESSING
Week 9	Introduction to BIOELECTRIC PHENOMENA
Week 10	Introduction to PHYSIOLOGICAL MODELING
Week 11	Introduction to GENOMICS AND BIOINFORMATICS
Week 12	Introduction to COMPUTATIONAL CELL BIOLOGY AND COMPLEXITY
Week 13	Introduction to RADIATION IMAGING
Week 14	Introduction to MEDICAL IMAGING
Week 15	Introduction to BIOMEDICAL OPTICS AND LASER
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	INTRODUCTION TO BIOMEDICAL ENGINEERING	
Recommended Texts	Fundamental of Biomedical Engineering	
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.