

Course Description Form

1. Course Name:	
Modern Medical Equipment	
2. Course Code:	
WBM-52-02	
3. Semester / Year:	
2 nd Semester / 2026	
4. Description Preparation Date:	
12/2/2026	
5. Available Attendance Forms:	
Weekly (Theoretical)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 Hrs. Theoretical / 2 Unit	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Hayder A. Yousif Email: hayder.ab@uowa.edu.iq	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Identify the medical devices implanted in the human body 2. How to design the part to be implanted in the human body According to the nature of the planting 3. Learn about open heart surgeries and pulmonary resuscitation 4. How to use the artificial heart, its benefits and harms 5. Knowledge of manufactured heart valves 6. Study the dialysis process and how to use artificial kidneys
9. Teaching and Learning Strategies	
Strategy	<p style="text-align: center;">To make the student able to understand the working principle of the modern medical device and its dealings with the human body, and to graduate engineers</p>

specialized in the field of biomedical engineering, which relates to human life with the medical device and work in the medical engineering environment.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	2	Artificial Organs and Prosthetic Devices	Theoretical	Daily test and oral questions
2	3		Heart-Lung Machine	Theoretical	Daily test and oral questions
3	3		Peristaltic Head Pump	Theoretical	Daily test and oral questions
4	3		Major Design Considerations	Theoretical	Daily test and oral questions
5	3		Artificial Hearts and Ventricular Assist Devices (VADs)	Theoretical	Daily test and oral questions
6	3		Heart Failure	Theoretical	Daily test and oral questions
7	3		AbioCor Artificial Heart, and Basic Components	Theoretical	Daily test and oral questions
8	3		Artificial Kidney and Dialysis System	Theoretical	Daily test and oral questions
9	3		Prediction of Time required for dialysis, and Diffusion.	Theoretical	Daily test and oral questions
10	3		Role of Ultrafiltration	theoretical	Daily test and oral questions
11	3		Hemodialysis Machine	Theoretical	Daily test and oral questions
12 & 13	3		Artificial Pacemakers	theoretical	Daily test and oral questions
14	3		Pulse Generator, Pacing Leads and Electrodes, Sensing Circuits	Theoretical	Daily test and oral questions
15	3		Timing Circuits, Power Source, Telemetry Circuit, and Programmers	Theoretical	Daily test and oral questions

11. Course Evaluation

- 1- Weekly exams
- 2- Monthly exams
- 3- Participations inside the class

4-Ppresent the seminars

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Biomedical Engineering, Joseph D. Bronzino, 3 rd Ed. 2012, Academic Press.
Main references (sources)	<ol style="list-style-type: none"> 1. Introduction to Biomedical Engineering, Joseph D. Bronzino, 3rd Ed. 2012, Academic Press. 2. Medical Devices and Systems, Joseph D. Bronzino, 1st Ed. 2006, CRC, Taylor & Francis. <p>The Biomedical Engineering Handbook, Joseph D. Bronzino, 4th Ed. 2015, CRC Press.</p>
Recommended books and references (scientific journals, reports...)	Standard handbook of biomedical engineering & design - M Kutz
Electronic References, Websites	https://books.google.iq/books/about/Handbook of Biomedical Instrumentation