

Course Description Form

1. Course Name:	
Diagnostic Instrumentation	
2. Course Code:	
WBM-51-03	
3. Semester / Year:	
1 st Semester / 2023 2024	
4. Description Preparation Date:	
19/3/2024	
5. Available Attendance Forms:	
Weekly (Theoretical & Practical)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 Hrs. Theoretical & 30 Hrs. Practical / 3 Units	
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	<p>The main aim of this study is studying some diagnostic devices that are related to the human body (such as the sonar device, the medical endoscope device, and the vital activity monitoring device) and study the principle working with its effect on the human body.</p> <p>In this course the student will study the Diagnostic Instrumentation (Medical Ultrasound, Endoscopy, and Patient Alarm Systems)</p> <p>The student will be able to know the following:</p> <ol style="list-style-type: none">1- The properties of ultrasound waves. The decibel notation for ultrasound intensity and pressure. The ultrasound properties of velocity, attenuation, and absorption. The ultrasound reflection, refraction and scattering, and principle working of ultrasound device.

2- Basic component of Endoscopy, Principle working of Endoscopy, and Types of Endoscopies.

9. Teaching and Learning Strategies

Strategy

The student will be able to understand the principle of operation of the Diagnostic Instrumentation and its dealings with the human body, and to graduate engineers 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	Studying the principle working of ultrasound device	Introduction to Medical Ultrasound	Theoretical & Practical	Daily test and oral questions
2	3	Learn about ultrasound transducers	Ultrasound Transducers	Theoretical & Practical	Daily test and oral questions
3	3	Learn about sonar imaging systems	Ultrasound Imaging Mode System	Theoretical & Practical	Daily test and oral questions
5&4	3	Learn about sonar imaging systems	Basic Modes of Transmission of Ultrasound	Theoretical & Practical	Daily test and oral questions
6	3	Introduction to the laparoscopic medical device	Introduction to Endoscopy	Theoretical & Practical	Daily test and oral questions
7	3	Learn about the basics of fibers in medical endoscopy	Basic Optics in Endoscopy	Theoretical & Practical	Daily test and oral questions
8	3	Identify the lighting sources used	Light Source	Theoretical & Practical	Daily test and oral questions
10&9	3	Knowing the types of endoscopies	Types of Endoscopies	Theoretical & Practical	Daily test and oral questions
11	3	Introduction to patient monitoring device	Introduction to Patient monitoring systems	Theoretical & Practical	Daily test and oral questions

12 13&	3	Knowledge of heart rate measurement and monitoring	Measurement of Heart Rate	Theoretical & Practical	Daily test and oral questions
& 14 15	3	Learn how to monitor a patient's blood pressure in the intensive care room	Pressure Monitoring	Theoretical & Practical	Daily test and oral questions

11. Course Evaluation

- 1- Weekly exams
- 2- Monthly exams
- 3- Participations inside the class
- 4-present the seminars
- 5- Writing reports

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Handbook of Biomedical Instrumentation Second Edition - R S KHANDPUR
Main references (sources)	Handbook Of Biomedical Instrumentation 3rd Edition 933920543X · 9789339205430 By R S Khandpur
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.html?idesc=y