Course Description Form

Course Name
oTribology
Course Code
M-52-06
Semester/Year
arterly
Date of preparation of this description
/4/2024
5. Available attendance forms
eekly (theoretical)
6. Number of credit hours (total) / total number of units
hours theoretical & 30 hours practical / 3units
7. Course Administrator Name
me: Eng. Natiq Aziz Omran ail: tikaziz81@gmail.com

Course Objectives

Bio-Tribology is the science of friction, lubrication and wear when applied to biological systems or natural phenomena. It is a diverse and multidisciplinary field which impacts all aspects of our daily life from prosthetic implants to personal care products.

A- Knowledge Objectives
A1- The student should be introduced to the science of biotribology and its multiple applications
A2- The student should distinguish between surfaces, their types and different ways of interaction
A3- The student should explain the difference in the materials used in the crops and compensation.
A4- The student should be able to calculate the values of friction and lubrication of various surfaces
A5- The student should evaluate the quality of the parties used and their proportionality with the user.

B - Course skills objectives
B1 – The student should measure the coefficient of friction of different materials
B2 – The student should notice corrosion and its types affecting the joints of the human body
B3 – The student should choose the appropriate material for the appropriate joint
B4- The student should differentiate between the medical materials used in the manufacture of crops and compensation.

Teaching and learning methods

Methodological book and lectures.
The teacher gives detailed theoretical lectures
Participation of students during the lecture to solve some practical problems.
Use of blended e-learning methods.

Evaluation methods

Daily exams with practical and scientific questions.
Participation grades for difficult competition questions among students.
Setting grades for homework and reports assigned to them.
Daily and monthly exams for the curriculum in addition to the end-of-semester exam.

C- Emotional and value goals

Leading human resources in accordance with professional and ethical standards.
Raising graduates on the principles of ethical and financial integrity.
Encourage students to work hard and consider themselves future leaders.

d. General and Transferable Skills (Other Skills Related to Employability and Personal Development.

D1- Diagnosis of the percentage of wear in implants and joints
D2- Dealing with friction and corrosion measuring devices for implants and joints
D3- Work efficiently within the medical team during joint replacement operations

Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2 Theoretical	Recognize the history of biotribology	Introduction to Biotribology	theoretical	Daily exam + discussion
2	2 Theoretical	Recognize surface types	Types of Surfaces	theoretical	Daily exam + discussion

3	2 Theoretical	Learn to calculate friction values	Friction calculations	theoretical	Daily exam + discussion
4	2 Theoretical	Identify the types of friction	Types of friction	theoretical	Daily exam + discussion
5	2 Theoretical	Learn the laws of static and moving friction,	Laws of static and dynamic friction	theoretical	Daily exam + discussion
6	2 Theoretical	Identify theories and types of corrosion	Theories and types of wear	theoretical	Daily exam + discussion
7	2 Theoretical	Learn to measure and calculate corrosion	Wear measurements	theoretical	Daily exam + discussion
8	2 Theoretical	Learn to measure friction and wear	Friction and wear measurement	theoretical	Daily exam + discussion
9	2 Theoretical	Recognize the lubrication mechanism	Lubrication mechanism	theoretical	Daily exam + discussion
10	2 Theoretical	Identify hydrodynamic lubrication	Hydrodynamic lubrication	theoretical	Daily exam + discussion
11	2 Theoretical	Recognition of	Elastic hydro	11	2 Theoretical

		lubrication for rubber systems	dynamic lubrication		
12	2 Theoretical	Identify the anatomy and structure of the joints of the human body	Human joints	theoretical	Daily exam + discussion
13	2 Theoretical	Identify the natural lubrication of human joints	Lubrication of human joints	theoretical	Daily exam + discussion
14	2 Theoretical	Recognition of friction in artificial joints	Bio tribology of artificial joints	theoretical	Daily exam + discussion
15	2 Theoretical	Learn about methods of lubrication of artificial joints	Lubrication of artificial joints	theoretical	Daily exam + discussion

1- Required textbooks:	• Biotribology by J. Paulo Davim, 2013
2- Main references (sources)	Biotribology by J. Paulo Davim, 2013
A- Recommended books and references (scientific journals, reports,.....)	Journal of Biotribology, ISSN 2352-5738

B- Electronic References, Websites	Websites of joint manufacturing companies and medical implants