

## Module(Course Syllabus)Catalogue 2023-2024

College/ Institute	Technology college	
Department	Automotive Technology Engineering	
Module Name	Mechanical Design II	
Module Code		
Degree	Technical Diploma <input type="checkbox"/>	Bachelor <input type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> D <input type="checkbox"/>
Semester		
Qualification		
Scientific Title		
ECTS (Credits)		
Module type	Prerequisite <input type="checkbox"/>	Core <input type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours		
Weekly hours (Theory)	( 3)hr Class	( 1 )Total hrs Workload
Weekly hours (Practical)	( )hr Class	( )Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Prof.Dr.Basim Mohammed Fadhil	
E-Mail& Mobile NO.	Basim.fadhil@epu.edu.iq	
Lecturer (Practical)		
E-Mail & Mobile NO.		
Websites		

# Course Book

<b>Course Description</b>	This course is concerned with the study of the important mechanical assemblies in mechanical applications, including the study of clutches, brakes, super gears ,helical gears as well as theories of failure.				
<b>Course objectives</b>	To understand and apply principles of gear design clutches, To understand and apply principles of gear design to brakes - To become proficient in Design of super , Helical and Bevel Gears.				
<b>Student's obligation</b>	The student's obligations are: 1-attending the lectures in the class and online, 2-doing homework, 3- doing assignments and quizzes.4- doing examinations.				
<b>Required Learning Materials</b>					
<b>Evaluation</b>	<b>Task</b>	<b>Weight (Marks)</b>	<b>Due Week</b>	<b>Relevant Learning Outcome</b>	
	Paper Review				
	Assignments	Homework	10%	4,8	
		Class Activity	2%	15	
		Report	8%	7	
		Seminar	8%	10	
		Essay			
		Project			
	Quiz	8%	4,6,10		
	Lab.				
	Midterm Exam	24%			
	Final Exam				
	Total				
<b>Specific learning outcome:</b>					
<b>Course References:</b>					

Course topics (Theory)	Week	Learning Outcome
<b>Clutches.</b> 1. Introduction. 2. Types of Clutches. 3. Friction Clutches. 4. Material for Friction Surfaces. 5. Considerations in Designing a Friction Clutch. 6. Types of Friction Clutches. 7. Single Disc or Plate Clutch. 8. Design of a Disc or Plate Clutch. 9. Multiple Disc Clutch. 10. Cone Clutch. 11. Design of a Cone Clutch. 12. Centrifugal Clutch. 13. Design of a Centrifugal Clutch.	1,2	
<b>Brake.</b> 1. Introduction. 2. Energy Absorbed by a Brake. 3. Heat to be Dissipated during Braking. 4. Materials for Brake Lining. 5. Types of Brakes. 6. Single Block or Shoe Brake. 7. Pivoted Block or Shoe Brake. 8. Double Block or Shoe Brake. 9. Simple Band Brake. 10. Differential Band Brake. 11. Band and Block Brake. 12. Internal Expanding Brake.	3,4	
<b>Spur Gears</b> 1. Introduction. 2. Friction Wheels. 3. Advantages and Disadvantages of Gear Drives. 4. Classification of Gears. 5. Terms used in Gears. 6. Condition for Constant Velocity Ratio of Gears–Law of Gearing. 7. Forms of Teeth. 8. Interference in Involute Gears. 9. Minimum Number of Teeth on the Pinion in order to Avoid Interference. 10. Gear Materials. 11. Design Considerations for a Gear Drive.	5,6,7	
<b>Helical Gears</b> 1. Introduction. 2. Terms used in Helical Gears. 3. Face Width of Helical Gears. 4. Formative or Equivalent Number of Teeth for Helical Gears. 5. Proportions for Helical Gears. 6. Strength of Helical Gears.	8,9	
<b>Bevel Gears</b> 1. Introduction. 2. Classification of Bevel Gears. 3. Terms used in Bevel Gears. 4. Determination of Pitch Angle for Bevel Gears. 5. Proportions for Bevel Gears. 6. Strength of Bevel Gears. 8. Forces Acting on a Bevel Gear. 9. Design of a Shaft for Bevel Gears.	10,11	
<b>Worm Gears</b> 1. Introduction. 2. Types of Worms. 3. Types of Worm Gears. 4. Terms used in Worm Gearing. 5. Proportions for Worms. 6. Proportions for Worm Gears. 7. Efficiency of Worm Gearing. 8. Strength of Worm Gear Teeth. 9. Wear Tooth Load for Worm Gear. 10. Thermal Rating of Worm Gearing. 11. Forces Acting on Worm Gears. 12. Design of Worm Gearing.	12,13	
<b>Sliding Contact Bearings</b> Introduction. 2. Classification of Bearings. 3. Types of Sliding Contact Bearings. 4. Hydrodynamic Lubricated Bearings. 5. Assumptions in Hydrodynamic Lubricated Bearings. 6. Important Factors for the Formation of Thick Oil Film in Hydrodynamic Lubricated Bearings. 7. Wedge Film Journal Bearings. 8. Squeeze Film Journal Bearings. 9. Properties of Sliding Contact Bearing Materials. 10. Materials used for Sliding Contact Bearings. 11. Lubricants.	13,14	



