Module(Course Syllabus)Catalogue

2022-2023

College/ Institute	Erbil Technology College	
Department	Automotive Engineering technology	
Module Name	Mathematics I	
Module Code		
Degree	Technical Diploma * Bachelor High Diploma Master ıD	
Semester	6th Semester	
Qualification	Ph.D. in Mechanical Engineering	
Scientific Title	Lecturer	
ECTS (Credits)	6	
Module type	Prerequisite Core * Assist.	
Weekly hours	2	
Weekly hours (Theory)	(3)hr Class	(162)Total hrs Workload
Weekly hours (Practical)	( )hr Class	()Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Dr. Lizan Mahmood Zangana	
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Lecturer (Practical)	Dr. Lizan Mahmood Zangana	
E-Mail & Mobile NO.	Lizan.khorsheed@epu.edu.iq 07511220401	
Websites		

Course Description	This course provides important skill building in basic computational skills, the language of mathematics, and problem solving required for pre-college level math courses. Students will be able to apply principles of whole number operations, fractions, decimals, percents, integers, ratios and proportions, and algebraic equations. This course provides students with an individualized mathematics curriculum to prepare them for further mathematics course work in their program. Students will take a diagnostic assessment, the results of which will outline their individualized math study path. Due to the individualized nature of this course, not all students are expected to complete all course outcomes. Topics will include: solving and graphing linear equations and inequalities; working with variables, exponents, polynomials, and factoring. Depending on your math pathway, additional topics may include expressions and equations that are rational, radical, quadratic, exponential, and logarithmic. This course is graded as satisfactory or unsatisfactory.This course covers the definition of functions and their properties and notation in both algebraic and graphical contexts. Students will be able to apply principles of polynomial and rational equations, functions and their inverses, graphs, systems of equations, complex numbers, sequences, and exponential and logarithmic functions.
Course objectives	▪ After successfully completing this course the student should be understand the basic rules of logic, including the role of axioms or assumptions • appreciate the role of mathematical proof in formal deductive reasoning • be able to distinguish a coherent argument from a fallacious one, both in mathematical reasoning and in everyday life • understand and be able to articulate the differences between inductive and deductive reasoning • proficiently construct logical arguments and rigorous proofs • formulate conjectures by abstracting general principles from examples. ▪ ormulate and solve abstract mathematical problems ▪ recognize real-world problems that are amenable to mathematical analysis, and formulate mathematical models of such problems

	▪ apply mathematical methodologies to open-ended real-world problems ▪ recognize connections between different branches of mathematics ▪ recognize and appreciate the connections between theory and applications. ▪ resent mathematics clearly and precisely to an audience of peers and faculty ▪ appreciate the role of mathematical proof as a means of conveying mathematical knowledge ▪ understand the differences between proofs and other less formal arguments ▪ make vague ideas precise by formulating them in mathematical language ▪ describe mathematical ideas from multiple perspectives ▪ explain fundamental mathematical concepts or analyses of real-world problems to non-mathematicians. ▪
Student's obligation	▪ The student must attendance the hall 3 hour the lecturer instruction wherein early attendance and bringing requisite tools and keep the hall clean and protect furniture. ▪ The student submits a weekly sheet solution about what have done in the section. For examination, there are semester exam and final exam for the theory parts. During the class hours there will be some quizzes.
Required Learning Materials	▪ To avoid student bared in the hall lecturer uses several tools, whiteboard, data show and other demonstrate tools to interest student.

Evaluation	**Task**		**Weight (Marks)**	**Due Week**	**Relevant Learning Outcome**
	Paper Review				
	Assignments	Homework	5		
		Class Activity	2		
		Report	5		
		Seminar	5		
		Essay			
		Project			
	Quiz		8		
	Lab.		10		
	Midterm Exam		25		
	Final Exam		40		
	Total		100		

Specific learning outcome:

- The course on Mathematics I is devised to introduce fundamental aspects of static and dynamics.
- Students will learn differentiation, integration, measure, limits, infinite series, and analytic functions,.
- Estimate all functions

Course References:

Ginsberg, H. P., Lee, J. Su, & Boyd, J. S. (2008). *Mathematics education for young children: What it is and how to promote it.* Social Policy Report. Giving Child and Youth Development Knowledge Away. Retrieved from https://files.eric.ed.gov/fulltext/ED521700.pdf

Sherman-LeVos, J. L. (2010). *Mathematics instruction for preschoolers.* Encyclopedia of Early Childhood Development. University of California, Berkeley.

Clements, D., Sarama, J., & Dibiase, A. (2004). *Engaging young children in mathematics. Standards for childhood mathematics education.* Mahway, NJ: Lawrence Erlbaum Associates.

Geary, D. C. (1994). Children's mathematical development: Research and practical applications. Washington, DC: American Psychological Association.

Course topics (Theory)	**Week**	**Learning Outcome**

The Rate of Change of a Function	1	
Exponential and Logarithm functions	2	
Trigonometric functions	3	
The inverse trigonometric functions	4	
Derivatives	5	
The Chain Rule	6	
Exponential functions	7	
Logarithm functions	8	
Integration	9	
Integrals of trigonometric functions	10	
Integrals of inverse trigonometric functions	11	
Integrals of inverse hyperbolic functions	12	
Practical Topics	**Week**	**Learning Outcome**

Questions Example Design

Q1: Evaluate the followings

10 Marks

$$1)\ \int \frac{dx}{\sqrt{1+4x^2}} \qquad 2)\ \int \frac{dx}{\sqrt{4+x^2}} \qquad 3)\ \int \frac{dx}{1-x^2}$$

$$4)\ \int \frac{dx}{x\sqrt{4+x^2}} \qquad 5)\ \int \frac{sec^2\theta\ d\theta}{\sqrt{tan^2\theta-1}} \qquad 6)\ \int tanh^{-1}\left(ln\sqrt{x}\right)\cdot\frac{dx}{x\left(1-ln^2\sqrt{x}\right)}$$

Q2: **Three of the following four points lie on a circle center the origin . Which are they , and what is the radius of the circle ?** ***A(-1.7) , B(5,-5) , C(-7,5) and D(7,-1).***

Q3: P(-2,-4) , Q(-5,-2) , R(2,1) **and** ***S*** **are the vertices of a parallelogram . Find the coordinates of** ***M*** **, the point of intersection of the diagonals and of** ***S.***

Extra notes:

Student must be any time ready for quizzes.

External Evaluator

I have read the terms of this article and acknowledge that it meets the required purpose.

Ramzi Barwari

Asst. Prof

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