Theoretical course plan form - Ilam University of Medical Sciences

School: Health

Introduction to the lesson

Department: Mathematics

Course Title:

Mathematics of students:

Environmental Health

Prerequisite courses: Does not have

Event Place: School of Health in charge of the course (teacher):Hojjat Sayadi

Number of units:3 units

Teaching time:51 hours

Students' degree: Bachelor's degree

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General purpose of the lesson:

Familiarity of students with some mathematical methods and techniques to better understand the mathematical models made in environmental sciences and gain the ability to build simple mathematical models and solve and analyze them

Student Exam Resources:

1. Calculus and Analytical Geometry Twelfth Edition, 2010, George B. Thomas et al., Translated by Farzin Haji Jamshidi et al., Fifth edition 2016, Saffar Publications

2. Differential Equations, Dr. Massoud Nikokar, 44th edition, Azadeh Publications

How to evaluate a student during the course:

• Methods and time of assessment and evaluation of the student and the bar related to each evaluation:

Method	Score	Date	Time	

				How to evaluate
Regular student attendance at class	5	During Semester	Scheduled training hours	Absenteeism attendance list
Do homework	20			Problem solving and assignments provided
End of semester exam	75	The time set by the faculty training		Virtual test

Student assignments during the course:

-Regular attendance at class meetings based on the weekly and semester schedule provided by the training

-Active participation in class activities and questions and answers

-Perform homework and exercises provided and present them in class

-Participate in end-of-semester exam sessions according to the schedule provided and answer questions on time

Teaching methods and teaching aids used

-In the form of lectures, questions and answers and problem solving

-Teaching aids will include a whiteboard (whiteboard), magic and a video projector with a computer with Mathematic software.

Lesson rules and expectations from students

1- Attending on time based on the set time in the classroom

2- Observance of training and disciplinary regulations

3- Studying the contents of the previous session and preparing to attend the class

4- Solve problems and assignments presented at home and present them to the class representative in a timely manner

5- According to the educational regulations, unjustified absence in the final exam will be considered as a score of zero and justified absence will cause the removal of that course.

Schedule of presentation of mathematics-health discontinuous environmental curriculum in the second semester of the academic year 2020-2021

Session	Specific Objectives (Outline)	Special Behavioral Goals The student should be able to at the end of each session	lecturer	Necessary preparation of students before the start of the class
1	Reminders of important math content	- Define the function and its types as usual. Be familiar with the role and importance of mathematics in medical and health sciences.	Dr. syaadi	
2	Defining boundaries and continuities and derivatives and expressing their meaning	Express the concept of limit of functions and limits of infinity and limit of infinity. - Be familiar with the concept of continuity and be able to identify types of discontinuities. - Be able to express the concept of derivative. Sequential derivatives of a given function are obtained. The derivative command obtains the powers of a given function.		review the contents of the previous session
3	Derivability of the function	- Understand the concept of a derivative of a given function at a point and be able to obtain it. Investigate and express the derivability of a function on a closed interval. State the chain rule in derivation and calculate it. - Derive from the functions that are implicitly stated.		
4	Determine the extreme points of the function and use the derivative to plot the functions	- Express his / her understanding of the concepts of relative and minimum, relative, maximum and absolute minimum of a given function in his / her domain. Express the role and average theorems and check for a given problem. Are there conditions for the roll theorem and the mean value or not? - Using the first and second derivative tests, a maximum and a minimum of a given function is obtained. - Draw a graph of functions		

5	Familiarity with differential and linearization	Express the concept of differential and calculate the differential of a given function. - By showing an example, show the use of differential in approximate calculations. - Learn the concept of linearization and its application		
6	Familiarity with optimization and lupital rule	- Get acquainted with optimization issues - Know the applications of the lupital rule Recognize the types of ambiguous forms in calculating the limits of functions and solve them		
7	Inverse of trigonometric functions	- Familiar with inverse trigonometric functions and be able to obtain the amplitude and range of such functions. These functions are antidotes to many other functions and therefore appear in the answers to a number of differential equations in engineering mathematics and physics.		
8	Definition of integral and familiarity with its types	- Be able to express the derivative and anti-derivative well. - Calculate definite and indefinite integrals well.		
9	Familiarity with integration methods	Use the methods of substitution integration multiplication, multiplication by 1, fractionation, anomalous fractions, and fractionation to calculate integrals.		
10	Definite integral and its applications	- Calculate a given integral. - Using the integral, calculate the area between two bends and the volume obtained from the period of one bend and the length of the bend.		
11	Familiarity with transcendent functions	Understand natural logarithms. - Get acquainted with their exponential and inverse functions. Understand the concepts of growth and decline and the relative rate of growth		
12	complex numbers	Familiarity with complex numbers and the method of solving quadratic equations with negative exponents		

13	Familiarity with differential equations and solving them	- Solve first-order and simple differential equations		
14	Familiarity with vectors in plane and space	- Calculate the internal multiplication of vectors. - Calculate the external multiplication of vectors. Understand the concepts of orthogonal vectors		
15	Line and page examples in three-dimensional space	- Be familiar with the equations of line and page in three-dimensional space		
16	Familiarity with linear algebra	Calculate the determinants and inverse of a matrix. - Solve linear equation devices into different classes.		
17	Introduction of bivariate and multivariate functions	- Define a function of two variables and three real variables. - Check the continuity of the function of two (three) independent variables at a point in the domain.		
18	Partial and differential functions of bivariate functions	- Define partial derivatives of bivariate functions and explain the geometric interpretation and calculation method. - Know the relationship of first order partial derivatives and the continuity of bivariate functions. Learn to use a chain rule for bivariate functions		
19	Application of derivatives of bivariate functions and their application	- Define the gradient vector of a bivariate function. Calculate how to obtain a tangent line perpendicular to a point on the alignment curve through the function derivative		
20	Extremes of bivariate functions	- Find the maximum and minimum local and saddle points of the bivariate functions.		
21	Integral of bivariate functions	Define the dual integral of a two-variable function on an area bounded by a coordinate plane - Specify the limits of integration. - Using the double integral, obtain the area and volume of shapes		
22	Vector functions 1	- Familiar with vector functions and be able to calculate differential, divergence, gradient and curl of this		

		type of function		
23	Vector functions 2	- Familiar with vector functions and be able to calculate differential, divergence, gradient and curl of this type of function		