Theoretical course plan form - Ilam University of Medical Sciences

School: Health

Introduction to the lesson Department: Mathematics

Course Title: Differential and integral calculus (general mathematics

 2) of students: Environmental Health

prerequisite courses:

General Mathematics 1

Event Place: School of Health

in charge of the course (lecturer): Hojjat Sayadi

Number of units:3 units

Teaching time:\51 hours

Degree of students: Bachelor

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General purpose of the lesson:

- Familiarity of students with important commands and equations of higher mathematics and solving differential equations and their application in problem solving

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. Numerical calculation methods, Dr. Behrooz Gholizadeh, 44th edition, 2012, Sharif University of Technology Press

3. Introduction to useful mathematical software, Dr. Aghileh Heidari, first edition 1393 Payame Noor University Press

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	Semester length	Scheduled training hours	Absenteeism attendance list
Do homework	20	Semester length	Scheduled training hours	Problem solving and assignments provided
Regular student attendance at class Do homework End of semester exam	75	The time set by the faculty training	Scheduled training hours	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 a timely manner to the class representative

-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 video recording and PowerPoint presentation

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- Solving problems and assignments presented at home and answering on the appointed date

5- According to the educational regulations, unjustified absence in the final exam will be considered as a score of zero Schedule of presentation of general mathematics curriculum 2- Environmental

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 concepts of limit and continuity.	Hojjat Sayadi	===========

2	Define the derivative and express its meaning by giving an example	-Can express the concept of derivative. Sequential derivatives of a given function are obtained. The derivative of the sum obtained by multiplication and composition is obtained. The derivative command obtains the powers of a given function.		knowing the contents of the previous session
3	Derivative	- Understand the concept of the 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. Express the chain rule in derivation and calculate it. - Derive from the functions that are implicitly stated.		knowing the contents of the previous session
4	Derivative application to determine the extreme points of a function and plot functions	- Express his / her understanding of the concepts of relative maximum and minimum and absolute maximum and minimum of a given function in his domain. Express the theorems of roll and mean 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.		knowing the contents of the previous session
5	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		knowing the contents of the previous session
6	Numerical integration	Be familiar with trapezoidal and Simpson methods for solving integrals		knowing the contents of the previous session
7	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		knowing the contents of the previous session
8	Line and page examples in three-dimensional space	- Be familiar with line and page equations in three-dimensional space		knowing the contents of the previous session
9	Familiarity with linear algebra	Calculate the determinants and inverse of a matrix. - Solve linear equation devices into different classes.		knowing the contents of the previous session
10	Eigenvalues and eigenvectors of matrices	- For matrices with different dimensions, calculate their appropriate values and special vectors		knowing the contents of the previous session
11	Polar coordinates	Be familiar with the polar coordinate system and its applications		knowing the contents of the previous session
12	sequence	Familiarize yourself with sequences and learn their types and related theorems		knowing the contents of the previous session

13	Series 1	- Familiarity with geometric and telescopic series		knowing the contents of the previous session
14	Series 2	- Familiarity with power series and their properties		knowing the contents of the previous session
15	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.		knowing the contents of the previous session
16	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 the chain rule for bivariate functions		knowing the contents of the previous session
17	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 a balance curve through a function derivative		knowing the contents of the previous session
18	Extremes of bivariate functions	- Find the local maximum and minimum and the saddle point of the bivariate functions.		knowing the contents of the previous session
19	Integral of bivariate functions	Define the dual integral of a bivariate 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		knowing the contents of the previous session
20	Vector functions1	Define the dual integral of a bivariate 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		knowing the contents of the previous session
21	Vector functions2			knowing the contents of the previous session