

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Vector Analysis
Course number	MATH3312
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 -	to provide the student with the very basic concepts of vector analysis
2 -	to provide the student with methods and results that are applicable in vector

Intended Learning Outcomes

Knowledge and Understanding	* identify scalar and vector fields
Professional Skills	* calculate the gradient of a scalar field and the divergence and curl of a vector field
	* use the divergence theorem and Stokes' theorem
	* apply the equations of continuity and motion for an inviscid fluid and use Bernoulli's equation
General Skill	* Team work and conducting specific tasks independently

Course Contents

1 -	Scalar and vector algebra
2 -	Vector function of real variable and differential geometry
3 -	Scalar and vector fields
4 -	Line, surface and volume integrals
5 -	Integral Theorems : Gauss, Green, and Stokes.

Teaching and Learning Methods

1 -	Lectures, Discussion, Solving problems
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Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
Homework	Week 8	5
Quiz	Any time	5
First mid-term	Week 6	20
Second mid-term	Week 13	20
Final Exam	Week 16	50

Books and References

Essential books	Vector analysis and Cartesian tensors - third edition 1993 - by D.E.Burue-P.C.Kendall Vector Analysis, P.Duraipandian & k.Pachaiyappa ,2014
Recommended books	Vector Analysis, R.Ghosh & K.Maity, 2011