



#### **Planning and Quality Assurance Affairs**

## **Course Specifications**

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

#### **Course Objectives**

1 - to provide the student with the very basic concepts of vector anaylsis

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 independentl

## **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 Stockes .

## **Teaching and Learning Methods**

1 - Lectures, Discussion, Solving problems

## **Students Assessment**

Assessment Method	<u>TIME</u>	MARKS
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