



## COURSE SPECIFICATION

### 1- Course Data

Course Title	Differential and Integral Calculus II	Code: BAS 115
Academic year / Semester	2013 / 2014, second Semester	
Program on which the course is given	All	
Major or Minor element of program	Major	
Department offering the course	Basic Science	
Prerequisites	BAS 111	
Credit hours	3	
Contact hours per week	Lecture: 4 Hours	Tutorials: 2 Hours

### 2- Course Aims

- To provide the students essential information and fundamentals of advanced Differential and Integral Calculus and their applications in engineering.
- To teach the students the algebra of matrices, series and complex numbers.
- To apply mathematical techniques for modeling, solving and analyzing real problems.

### 3- Intended Learning Outcome (ILOs)

a- Knowledge and understanding	a1- Identify theories and fundamentals of mathematics. a2- Define mathematical methods for solving problems. a3- Outline mathematical techniques for modeling real problems.
b- Intellectual Skills	b1- Analyze mathematical problems and categorize them. b2- Solve practical problems using mathematical methods. b3- Make mathematical models to real problems in the light of available data and information.
c- Professional and Practical Skills	c1- Apply mathematical logic and techniques for solving real life problems c2- Diagnose solutions to real life problems. c3- Prepare professional reports via mathematical logic.
d- General and Transferable Skills	d1- Communicate effectively using different means. d2- Use information technology for obtaining information. d3- Work in a group and lead a team. d4- Manage time effectively and conduct self learning .

### 4- Contents

Topic	No. of Weeks	No. of Hours
Introduction and algebra of matrices	2	8
Binomial expansion, Finite series, Infinite series and power series	2	8
Complex numbers	1	4
Functions of several variables and partial derivative	2	8
Maximum and minimum values, Conditional extrema, Envelope	2	8
Vectors Analysis	2	8
Double integral, Triple integral, Surface integral, Line integral	2	8



### 5- Teaching and Learning Methods for Students with Special Needs

White board, Prepared notes, Data Show.

### 6- Learning and Teaching Activities

Tools	Intended Learning Outcomes Achieved
Interactive Lectures	ILOs: a1, a2, a3, b1, b2, b3, c1, c2, c3.
Tutorials	ILOs: b1, b2, b3, c1, c2, c3.
Assignments and Homework	ILOs: d1, d2, d3, d4.

### 7- Student Assessment

#### ▪ Assessment Strategy

Tools	Intended Learning Outcomes Achieved
Quizzes	ILOs: a1, a2, b1, b2, c1, c2.
Written Exams	ILOs: a1, a2, a3, b1, b2, b3, c1, c2, c3.
Assignments and Homework	ILOs: d1, d2, d3, d4.

#### ▪ Assessment Details

Methods of Assessment	Grading Mode	Weighting %	Minimum Pass Mark	Outline Details
Quizzes	10	10 %		Weeks: 4, 11
Assignments	10	10 %		Weeks: 3, 5, 10, 12
Mid-Term Exam	20	20 %		Week 8: 1 hour
Final Exam	60	60 %	18	Week 15: 2 hours

### 8- List of References

a- Course Notes	Lecture notes.
b- Required Books (text books)	<ul style="list-style-type: none"><li>• Calculus, 3<sup>rd</sup> Edition, R. T. Smith and R.B. Minton, McGraw Hill, U.S.A, 2009.</li><li>• Calculus, 6<sup>th</sup> Edition, James Stewart, Thomson Brooks / Cole, U.S.A, 2008.</li><li>• Linear Algebra And Its Applications, 3<sup>rd</sup> Edition, Gilbert Strang, Thomson Brooks / Cole, U.S.A, 1988.</li></ul>
c- Recommended Books	<ul style="list-style-type: none"><li>• Advanced Engineering Mathematics, E. Kreyszig, John Wiley and Sons, New York, 1999.</li></ul>
d- Periodicals, web sites,...	<a href="http://www.mhhe.com">www.mhhe.com</a> <a href="http://www.intmath.com">www.intmath.com</a> <a href="http://www.thomsonrights.com">www.thomsonrights.com</a>

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Head of Department: