



Prince Sultan University
DES/ Mathematics and General Sciences
171 Semester 2017 - 2018

INSTITUTIONAL COURSE SYLLABUS TEMPLATE

Course Code: Math215	Course Title: Engineering Mathematics
Course Instructor: Prof. Dr. Thabet Abdeljawad	Email: tabdeljawad@psu.edu.sa
Credit Hours: 3	Lectures: Sunday, Monday, Tuesday, Wednesday 10.00—10.50 E 361
Office Hours: Everyday	
Office: E 254	

Mission: The Department of Mathematics and General Sciences is committed to offering a broad high quality education that will lay a durable educational foundation to meet the specialized professional development requirements in PSU degree programs. The department supports the development of student's skills that enables them to perceive patterns in complexity, render reasoned judgments, and seek the highest level of intellectual achievement and personal growth. We also encourage the students to develop personal qualities such as perseverance, initiative, self-confidence and independence.

I. Course Description: This course has two parts-the first introduces the students to advanced topics in calculus such as such fuctions of several variables, double integrals and thier applications and triple integrals, the secons part deals with elmentary topics in linear algebra. Indeed, topics like Vectors in 2-Space and 3-Space, Vector spaces, Inner Produce Spaces and Eigenvalues and Eigenvectors are considered.

II. Course Learning Outcomes: (A summary of intended learning outcomes of the course in each domain of learning - Please refer to the specific descriptions on Pg. 4-5 of this template).

Skills	Course Learning Outcomes	Measured by
Knowledge (Recall& Use)	1. . 2.	By homework, quizzes and exams.
Comprehension (Understanding)	1.	
Application (Applying)	1.	By homework, quizzes and exams.
Evaluation	1.	
Affective Interpersonal	1.	

III. Course Content or your weekly schedule (Specific course topics to be covered within the semester).

Topics	No. of Weeks	Contact Hours
14.1 Functions of Several Variables 14.2 Limits and Continuity	1 (17.9-21.9)	4
14.3 Partial Derivatives 14.4 Tangent Planes and Differentials	2 (24.9-28.9)	4
14.5 The Chain Rule 14.7 Maximum and Minimum Values	3 (October 01 – 05)	4
15.1 Double Integrals 15.2 Iterated Integrals	4 (October 08 – 12)	4
15.3 Double Integrals over General Regions 15.4 Double Integrals in Polar Coordinates	5 (October 15 – 19)	4
15.6 Surface Area 15.7 Triple Integrals	6 (October 22 – 26)	4
15.8 Triple Integrals in Cylindrical coordinates 15.9 Triple Integrals in Spherical coordinates	7 (Oct. 29 – Nov. 02)	4
3.1 Introduction to Vectors 3.2 Norm of a vector: Vector Arithmetic	8 (November 05 – 09)	4
First Major Exam 12 Nov. 2017	Chap. 14, 15 only	
3.3 Dot product: Projections 3.4 Cross Product	9 (November 12 – 16)	4
3.5 Lines and planes in 3-space 4.1 Euclidean Inner Product	10 (November 19 – 23)	4
4.2 Linear Transformations 4.3 Properties of Linear Transformations	11 (November 26 – 30)	4
5.1 Real vector Spaces 5.2 Subspaces	12 (December 03 – 07)	4

5.3 Linear Independence 5.4 Basis and Dimensions	13 (December 10 – 14)	4
Major Exam II December 17	Chap. 3,4 and 5.1,5.2	
6.3 Orthonormal Bases 7.1 Eigenvalues and Eigenvectors	14 (December 17– 21)	4
7.2 Diagonalization 7.3 Orthogonal diagonalization	15 (December 24– 28)	4

IV. Course Components (Indicate the total contact hours within the semester).

Component	Contact Hours
Lecture	45
Tutorial	15
Practical/Field	

V. Teaching Strategies (Indicate the teaching and student activities to be used to develop the kinds of learning involved in each learning domain. See the Faculty Guidelines for Conditions for Different Domains of Learning on Pg. 6 & 7. Also, research specialized Information about Best Teaching Practices for the particular course/field).

Domain	Strategy
Knowledge	
Cognitive Skills	
Interpersonal Skills & Responsibility	
Numerical & Communication Skills	

VI. Course Requirements (Specify the requirements of the course - reports, examinations, quizzes, projects or recitations. These requirements should be consistent with the Course Specification on file in the particular department): Homework, and Exams.

VII. Student Assessment

A. Assessment Task (Indicate the kind of assessment tasks to be used to measure student learning in each of the learning domain. Example: quiz, oral examination, group work, etc).

Domain	Assessment Task
Knowledge	
Cognitive Skills	HW and Exams
Interpersonal Skills & Responsibility	
Numerical & Communication Skills	

B. Schedule of Assessment (Specify the schedule/date of assessment & proportion of assessment, attach related rubrics for each assessment if applicable. For examples of rubrics, visit www.irubrics.com . The schedule should be consistent with the academic calendar. Any significant changes should be avoided. If significant changes are made, academic leaders should be informed in writing and students should be given a new schedule of assessment table).

Assessment	Assessment Task	Week Due	Proportion of Final Assessment
1	Major I	Nov. 12	25%
2	Major II	Dec. 17	25%
3	Final		40%
4	HW		10%

VIII. Learning Resources

A. References –

**B. TEXTBOOK : Early Transcendental Functions. 7th Ed. By J. Stewart.
Elementary Linear Algebra.9th Ed. By H. Anton.**

- SUPP. TEXTBOOK: Advanced Engineering Mathematics, ERWIN KREYSZIG.

B. Facilities Required - Lecture Room, Boards and Projectors.

C. Learning Management System – LMS is efficiently used., Whatsapp Group.

