Swami Ramanand Teerth Marathwada University, Nanded

First Year Engineering
Revised Syllabus
For Group-I
(Revision – 2014)

Sr. No.	Subject	Theory per Week	Tutorial / Practical	Theory	Online MCQ Test	Test	Term Work/Pr Exam	Total
1.	Engineering Mathematics-I	04	02	60	20	20	25	125
2.	Engineering Physics	04	02	80	--	20	25	125
3.	Engineering Drawing	04	04	80	--	20	50	150
4.	Basic Electrical & Electronics Engineering	04	02	60	20	20	25	125
5.	Elements of Civil & Environmental Engineering	04	02	80	--	20	25	125
6.	Workshop	--	04	--	--	--	50	50
Total		**20**	**16**	**360**	**40**	**100**	**200**	**700**
1.	Engineering Mathematics-II	04	02	60	20	20	25	125
2.	Engineering Chemistry	04	02	80	--	20	25	125
3.	Elements of Mechanical Engineering	04	02	80	--	20	25	125
4	Fundamentals of Computer Programming	04	04	60	20	20	50	150
5.	Engineering Mechanics	04	02	60	20	20	25	125
6.	Communication Skills	02	02	--	--	--	50	50
Total		**22**	**14**	**340**	**60**	**100**	**200**	**700**
Grand Total		**42**	**30**	**700**	**100**	**200**	**400**	**1400**

Note:

1. Term work of Fundamentals of Computer Programming is to be evaluated theory practicals conducted regularly and one internal practical examination.
2. Term work of Communication Skill is to be evaluated theory regular assignments/practicals and one internal theory examination.

ENGINEERING MATHEMATICS –II

Theory: 60 Marks Online MCQ Test : 20 Marks Test : 20 Marks Term Work : 25 Marks

Course Objectives

1. Provide a conceptual study of functions of several variables viz. Limits and continuity, derivatives, and integration along with its applications to engineering problems.
2. Study Fourier series expansion of functions on a finite domain

Course outcomes

1. Understand the concept of limits and continuity of functions of multiple variables.
2. Partial differentiation and application to extreme values of functions.
3. Able to express continuous and piecewise continuous functions as series of periodic functions.

Course Contents	Hrs
Unit 1 **Functions of Several Variables** Introduction, Function of Two Variables, Chain Rule, Implicit Function,Partial Derivatives with Constrained Variable ,Homogeneous Function. TB-2 : 11.1, 11.2, 11.3, 11.4, 11.5 TB-1: 12.1, 12.2, 12.3, 12.5, 12.6 TB-4: 2.2 , 2.3, 2.4.1	7
Unit 2 **Application of Partial Derivative** Jacobians, Properties of Jacobian a) Chian Rule b) j.j=1, Functional Dependence, Extreme values of two or more Variables. (No lagrange method of multipliers) TB-2: 11.7 TB-1: 12.8 TB-4: 2.5	7
Unit 3 **Double Integral** Introduction to some standard curves Cartesian and polar form of curve Astroid, b) Cycloid, c) Cardiode, d) Catenary, double integrals in Cartesian Form, Double Integrals in Polar Form, Change of Order. TB-1: 13.1, 13.3, 13.7 TB-2: 12.1, 12.2, 12.3 TB-4: 2.6.1, 2.6.3	7
Unit 4 **Triple Integrals** Triple Integrals in Rectangular Co-ordinates, Triple Integrals in Cylindrical Co-ordinates, Triple Integrals in Spherical Polar Co-ordinates TB-1: 13.4, 13.6 TB-4: 2.6.2, 2.6.2 TB-2: 12.4, 12.5	7
Unit 5 **Application of Multiple Integrals** Applications of Double Integral to find area and Volume, Applications of Triple Integrals for Volume. TB-4: 2.6.2 TB-2: 12.2, 12.3, 12.4, 12.5	7

TB-1: 13.1, 13.2, 13.3, 13.4	
Unit 6 **Fourier Series** Introduction (Dirichelt's Conditions), Fourier Series of any period $p=11$, Fourier series of Even and Odd function, Half Range Expansions. TB-3: 10.2, 10.3, 10.4 TB-4: 9.2, 9.2.1, 9.3, 9.3.1	7
Term Work/Practicals/Assignments	
Text Books (Name of the author, Book Title, name of the Publisher, edition, year of publication) a) George B.Thomas, Jr. &Ross L. Finney, *Calculus*,pub. Pearson Education, b) Ninth Edition ,2008. c) Monty J. Strauss, Gerald L . Bradley, Karl J. Smith, *Calculus*, Pearson Education, 2007 d) Erawin Kreyszig, *Advance Engineering Mathematics*, Wiley India Pvt. Ltd New D elhi , Ninth Edition, 2008. e) R.K. Jain and S.R,K, Iyenger, *Advanced Engineering Mathematics,* Narosa Publication House, New Delhi,third edition 2009. **REFERENCE BOOK** a) Howard Anton, Irlbivens Stephen Davis , *CALCULUS publication* Willy Indian , 7th edition,2012. Dr. B. S. Grewal, *Higher Engineering Mathematics*, pub. Khanna publishers, 41st Edition,2011.	