BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI-HYDERABAD CAMPUS
SECOND SEMESTER 2019-2020
COURSE HANDOUT (Part II)

06-01-2020

In addition to Part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number **:** **BITS F114**
Course Title **:** **General Mathematics II**
Instructor-In charge **:** **A Ramu**
Instructors **:** A Ramu, A Revathi

1. **Scope and Objective of the Course:** The course is made for Pharmacy students keeping in mind the importance of Calculus and differential equations in every branch of Science and Engineering. Functions of several variables appear more frequently in Science than functions of a single variable. Their derivatives are more interesting because of the different ways in which the variables can interact, while differential equations of both homogeneous and non-homogeneous also plays a vital role in Engineering and Sciences. This course includes Polar Co-ordinates, Functions of several variables, Multiple Integrals, Vector Valued functions, Complex functions and Ordinary differential equations.

2. **Text Books:**
   For Topic I: Weir, MD, Hass J, Giordano FR: Thomas' Calculus, Pearson education 11th Ed, 2007.
   For Topic II and III: Erwin Kreyszig- Advanced Engineering Mathematics, 8th Edition Wiley-India, 2007.

3. **Reference Books:**
   James Stewart- Calculus, 5e, Cengage learning, 2003.
   Grewal, BS., Higher Engineering Mathematics, 40th Edition, Khanna Publishers, 2007.

4. **Course Plan for General Mathematics II:**

Lect. No.	Broad Topic	Learning objectives	Sub-topics to be covered	Chapter in the Text Book
			I	
1-2	Polar co-ordinates	How to obtain length of a polar curve and area of a surface of revolution of a polar curve?	Introduction to PC- Relation between Cartesian and polar, Polar curves (without sketching)	10.5-10.6
3-9	Function of several variables	Mathematical definition of a local	Function, Limit, Continuity, Partial derivatives, Chain rule,	14.1-14.5

		Maximum and Minimum. Use of chain rule. Relevance to the discipline	Directional derivatives, Extreme values and Saddle point, Lagrange Multipliers	14.7-14.8
10-14	Multiple Integrals	How formula for area in polar coordinates can be found through polar double integral?	Double integral, Double integral in polar form	15.1, 15.3
15-17	Vector valued functions	Appreciate the concepts of vectorial representation	Vector valued functions and Space curve	13.1
			II	
18-22	Complex functions and their analyticity	Mathematical definitions of complex valued functions	Complex number, root and functions, Derivative and CR equations and Analyticity	13.1-13.4
			III	
23-27	First and Second order differential equations	Learning to develop basic mathematical modelling	Introduction (Degrees and Order), Linear first order ODE, Linear differential equations, Separable and Exact ODE	1.1-1.4
28-34		Learning to develop higher level of mathematical modelling	Second order linear homogenous ODE, Cauchy-Euler ODE, NON-homogenous ODE	2.1-2.3, 2.5, 2.7
35-41	Laplace transformations	A different tool to solve the mathematical models.	Laplace transformations, Solutions of ODE using Laplace transformations	6.1-6.7

5. **Evaluation Scheme:**

Sl. No.	Evaluation Component	Duration	Weightage (%)	Date and Time	Nature of Component
1	Quiz-1	20 min	**5**	Will be announced	**CB**
2	Quiz -2	20 min	**5**	Will be announced	**CB**
3	Assignment-1		**10**		**OB**
4	Mid - sem	90 min	**25**	2/3 9.00 - 10.30AM	**CB**
5	Quiz – 3	20 min	**5**	Will be announced	**CB**
6	Quiz - 4	20 min	**5**	Will be announced	**CB**
7	Assignment-2		**10**		**OB**
8	Compre Exam	3 hours	**35**	01/05 FN	**CB**

6. **Announcements:** All announcements in relation to the above course will be put up in CMS
7. **Make up policy:** Make up for the mid-semester/comprehensive examination will be given to genuine cases.
8. **Chamber consultation hours:** To be announced in the class.
9. **Academic Honesty and Integrity Policy:** Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor In-Charge
BITS FII4