Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2020-21

Course Handout Part II

16/01/2021

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 No. : ECE F312
Course Title : Electromagnetic Fields and Microwave Engineering Laboratory
Instructor-in-Charge : Sourav Nandi
Instructors :

Scope and Objective of the Course: Microwave components and systems have made a great impact on our society with the rapid proliferation of various consumer products. The focus of the Microwave Laboratory will be the development and use for scientific studies of the microwave frequencies. It makes the student aware of basic concept of the Microwave Test-Bench. Experiments based on microwave sources, VSWR measurement, impedance measurement, various microwave components will be carried out in this lab. This lab will also motivate the students to work towards the design and analysis of microwave circuits, filters, couplers and microstrip antennas for microwave wave applications using design software.

Textbooks:

1. Lab Manual on Electromagnetic Fields and Microwave Engineering Laboratory
2. Basic microwave techniques and laboratory manual by M.L. Sisodia
3. Ansys HFSS Manual

Course Plan:

The laboratory classes will be conducted in the Microwave Engineering laboratory. The practical experiments are intended to provide hands-on experience on the concepts learnt in the Electromagnetic Fields and Microwave Engineering course. Details of the experiments will be available in the “Laboratory Manual”. Laboratory marks mentioned includes marks for record and attendance in lab practical.

List of Experiments

Experiment No.	Name of the Experiment	Date
1.	Microwave Components familiarization	23/01/2021
2.	Design of various guiding structures: Rectangular waveguide	30/01/2021
3.	Design of various guiding structures: Microstrip line	06/02/2021
4.	Design of various guiding structures: Coplanar Waveguide, Substrate Integrated	13/02/2021

	Waveguide	
5.	Design of Wilkinson power divider	20/02/2021
6.	Design of quadrature hybrid coupler	27/02/2021
7.	Design of ring hybrid coupler	13/03/2021
8.	Design of magic-T	20/03/2021
9.	Design of conventional half-wavelength dipole antenna	27/03/2021
10.	Design of planar half-wavelength dipole antenna	03/04/2021
11.	Design of rectangular microstrip patch antenna	10/04/2021
12.	Design of rectangular waveguide antenna array	17/04/2021

Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Laboratory Practical Regular class work	2 hours/ week	45%	Regular lab Performance	Open Book
Midsem Lab Quiz	30 mins	25%	Will be announced	Open Book
Lab Exam	90 mins	30%	Will be announced	Open Book

Chamber Consultation Hour: To be announced in lab
email: sourav@hyderabad.bits-pilani.ac.in

Notices: All notices of this course will be displayed in CMS

Make-up Policy: Only One Lab Make-up will be granted for genuine reason with prior-permission from Instructor-in-charge. Makeup for Midsem Test and Comprehensive Examination will be given only in **extremely genuine cases** for which prior permission of the instructor-in-charge is required.

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.

Sourav Nandi
INSTRUCTOR-IN-CHARGE
ECE F312