



COURSE FILE

ON

Microwave and Optical Communications Lab

Course Code – EC703PC

IV B.Tech I-SEMESTER

A.Y.: 2022-2023

Prepared by

Mrs. T. Bhavani
Assistant Professor

A handwritten signature in black ink, appearing to be 'L. S. Rao'.

Head of the Department
Electronics and Communication Engg. Dept
SRI INDU INSTITUTE OF ENGG & TECH
Sheriguda(V), Ibrahimpatnam(M), R.R.Disi-501 510

A handwritten signature in green ink, appearing to be 'Sri Indu'.

PRINCIPAL
Sri Indu Institute of Engineering & Tech,
Sheriguda(VIII), Ibrahimpatnam
R.R. Dist. Telangana-501 510.



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Name of the physical laboratory	Microwave and Optical Communications Lab
Course code	EC703PC
Room No.	A-116
Name of the lab in charge	T.BHAVANI
Name of the Faculty in charge	T.BHAVANI

Index of Course File

S. No.	Name of the content
1	Institute vision and mission
2	Department vision and mission
3	Program Educational Objectives/ Program Specific Outcomes
4	Program outcomes
5	Course Syllabus with Structure
6	Course Outcomes (CO) and CO-PO mapping
7	List of experiments and their CO, PO mapping
8	Time table
9	Model Practical End examination questions
10	Schedule of end practical examinations
11	List of examiners
12	Lab occupancy chart
13	Dos and Don'ts
14	Physical lab floor plan with area in Sq.m
15	Lab manual
16	Lab Attainments



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INSTITUTE VISION AND MISSION

Vision:

To become a premier institute of academic excellence by providing the world class education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:

IM1: To offer outcome-based education and enhancement of technical and practical skills.

IM2: To Continuous assess of teaching-learning process through institute-industry collaboration.

IM3: To be a centre of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.

IM4: To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

DEPARTMENT VISION AND MISSION

Vision:

To become a recognized center in the field of Electronics and Communication Engineering by producing creative engineers with social responsibility and address ever-changing global challenges.

Mission:

DM1: To facilitate an academic environment that enables student's centric learning.

DM2: To provide state-of-the-art hardware and software technologies to meet industry requirements.

DM3: To continuously update the Academic and Research infrastructure.

DM4: To Conduct Technical Development Programs for overall professional caliber of Stake Holders.

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PROGRAM EDUCATIONAL OBJECTIVES

Program Educational objectives are to Promote:

- PEO1:** Graduates with a strong foundation in Electronics and Communication Engineering, Science and Technology to become successful in the chosen professional career.
- PEO2:** Graduates with ability to execute innovative ideas for Research and Development with continuous learning.
- PEO3:** Graduates inculcated with industry based soft-skills to enable employability.
- PEO4:** Graduates demonstrate with ability to work in interdisciplinary teams and ethical professional behavior.

PROGRAM SPECIFIC OUTCOMES

- PSO 1: Design Skills:** Design, analysis and development a economical system in the area of Embedded system & VLSI design.
- PSO 2: Software Usage:** Ability to investigate and solve the engineering problems using MATLAB, Keil and Xilinx.

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PROGRAM OUTCOMES

- 1. ENGINEERING KNOWLEDGE:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. PROBLEM ANALYSIS:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. DESIGN/DEVELOPMENT OF SOLUTIONS:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. MODERN TOOL USAGE:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- 6. THE ENGINEER AND SOCIETY:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. ENVIRONMENT AND SUSTAINABILITY:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. ETHICS:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9. INDIVIDUAL AND TEAM WORK:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. COMMUNICATION:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.
- 11. PROJECT MANAGEMENT AND FINANCE:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. LIFE-LONG LEARNING:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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Website: <https://siiet.ac.in/>

Course Syllabus with Structure

R18 B.Tech. ECE Syllabus

JNTU HYDERABAD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech. IN ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE STRUCTURE & SYLLABUS (R18)

Applicable From 2019-20 Admitted Batch

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	EC701PC	Microwave and Optical Communications	3	0	0	3
2		Professional Elective – III	3	0	0	3
3		Professional Elective – IV	3	0	0	3
4		Open Elective - II	3	0	0	3
5	SM702MS	Professional Practice, Law & Ethics	2	0	0	2
6	EC703PC	Microwave and Optical Communications Lab	0	0	2	1
7	EC704PC	Industrial Oriented Mini Project/ Summer Internship	0	0	0	2*
8	EC705PC	Seminar	0	0	2	1
9	EC706PC	Project Stage - I	0	0	6	3
		Total Credits	14	0	10	21

EC703PC: MICROWAVE AND OPTICAL COMMUNICATIONS LAB

B.Tech IV Year I Semester

L	T	P	C
0	0	2	1

Note: Any **twelve** of the following experiments

LIST OF EXPERIMENTS:

1. Reflex Klystron Characteristics.
2. Gunn Diode Characteristics.
3. Attenuation measurement
4. Directional coupler Characteristics.
5. Scattering parameters of wave guide components
6. Frequency measurement.
7. Impedance measurement
8. VSWR measurement
9. Characterization of LED.
10. Characterization of Laser Diode.
11. Intensity modulation of Laser output through an optical fiber.
12. Measurement of Data rate for Digital Optical link.
13. Measurement of Numerical Aperture of fiber cable.
14. Measurement of losses for Optical link



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CO, PO, PSO'S MAPPING

A.Y: 2022-23

SEMESTER: I

CLASS: IV ECE-B

Course Outcomes After completing this course, the student will be able to:

- C416.1 Examine the Reflex Klystron and Gunn Diode characteristics (Analysis)
- C416.2 Measurement of Impedance and Characteristics of Directional Coupler. (Evaluation)
- C416.3 Solve VSWR, Wave guide Components and impedance of given load. (Evaluation)
- C416.4 Illustrate Attenuation and Microwave Frequency. (Comprehension)
- C416.5 Examine the Laser diode and LED characteristics. (Analysis)
- C416.6 Calculate the Numerical Aperture and Data Rate of a Digital Optical Link. And Measure the Losses for optical link and intensity modulation of laser output through an optical fiber. (Analysis)

Mapping of course outcomes with program outcomes:

High -3 Medium -2 Low-1

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C416.1	3	2	2	-	-	-	-	-	-	-	-	-	1	1
C416.2	3	2	-	-	-	-	-	-	-	-	-	2	2	2
C416.3	3	3	-	2	-	-	-	-	-	-	-	-	2	1
C416.4	3	3	-	2	-	-	-	-	-	-	2	-	1	1
C416.5	3	2	-	-	-	-	-	-	-	-	-	2	2	2
C416.6	3	2	2	-	-	-	-	-	-	-	2	3	2	1
AVG	3	2.33	2	2	-	-	-	-	-	-	2	2.3	1.67	1.33



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LIST OF EXPERIMENTS AND THEIR CO, PO, PSO MAPPING

S.No	Name of The Experiment	CO	PO	PSO
1	Reflex Klystron characteristics	1	1,2,3	1,2
2	Gunn Diode Characteristics	1	1,2,3	1,2
3	Attenuation measurement.	4	1,2,4,11	1,2
4	Directional coupler characteristics	2	1,2,12	1,2
5	Measurement of Scattering Parameters of a waveguide components	3	1,2,4	1,2
6	Microwave frequency measurement	4	1,2,4,11	1,2
7	Measurement of Impedance of a given load.	3	1,2,4	1,2
8	VSWR measurement	3	1,2,4	1,2
9	Characterization of LED	5	1,2,12	1,2
10	Characterization of laser diode	5	1,2,12	1,2
11	Intensity modulation of laser output through an optical fiber	6	1,2,3,11	1,2
12	Measurement of data rate for digital optical link	6	1,2,3,11,12	1,2
13	Measurement of Numerical aperture of fiber cable	6	1,2,3,11,12	1,2
14	Measurement of losses for optical link	6	1,2,3,11,12	1,2



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Class Timetable

CLASS: IV-B.Tech ECE-B

A.Y:2022-23

SEMESTER: I

LH: B-203

TIME/ DAY	I 9:40-10:30	II 10:30 -11:20	III 11:20-12:10	IV 12:10-1:00	1:00-1:30	V 1:30-2:20	VI 2:20-3:10	VII 3:10-4:00
MON	PPL&E	MW&OC	COUN	DIP	L U N C H	JAVA	NS&C	PPL&E
TUE	DIP	JAVA	MW&OC	NS&C		PPL&E	MW&OC LAB / SEMINAR	
WED	MW&OC	PPL&E	DIP	INT		NS&C	CO-CU/DAA	
THU	DIP	PROJECT STAGE-I				JAVA	MW&OC	SPORTS
FRI	NS&C	PROJECT STAGE-I				DIP	SEMINAR / MW&OC LAB	
SAT	JAVA	IOMP				MW&OC	LIB	NS&C

*(T) - Tutorial Concern Faculty

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
EC701PC	MW&OC-Microwave and Optical Communications	T.Bhavani	EC703PC	MW&OC LAB-Microwave and Optical Communications Lab	T.Bhavani/Y.Rajani
EC713PE	DIP-Digital Image Processing(Prof.Elec.-III)	Dr.S.Suresh	EC704PC	IOMP-Industry Oriented Mini Project	K.Rajender/Y.Rajani/ P.Sumana
			EC705PC	Seminar	Dr.K.Srinivasa Reddy/I.Venu/S.Naresh
			EC706PC	Project Stage-I	T.Bhavani/K.Padma/K.Mallaiah
EC723PE	NS&C-Network Security and Cryptography (PE - IV)	Dr.K.Srinivasa Reddy	LIB	Library	D.Aruna Kumari/G.Anitha
			SPORTS	Sports	G.Swathi
CS703OE	JAVA- Java Programming (Open Elective - II)	D.Nagaraju	COUN	Counseling	I.Venu/T.Bhavani/A.Apsara
			INT	Internet	S.Naresh/A.Apsara
SM702MS	PPL&E- Professional Practice, Law & Ethics	K.Balakrishna	CO-CU/	Co-Curricular/Department Association	T.Bhavani/B.Ashwini

Class Incharge

Head of the Department
Electronics and Communication Engg. Dept
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MICROWAVE AND OPTICAL COMMUNICATIONS LAB

EXTERNAL EXAM QUESTION PAPER

A.Y.2022-23

CLASS: IV

SEMESTER: I

1. Generate Reflex klystron characteristics and observe the values.
2. Generate Gunn diode characteristics.
3. a) Measure the scattering parameters of E plane Tee junction.
b) Measure the scattering parameters of H plane Tee junction.
c) Measure the scattering parameters of Magic Tee.
4. Find attenuation by using Microwave Bench Setup.
5. Calculate and measure the Microwave frequency.
6. Calculate and measure the characteristics of directional coupler.
7. Find Impedance of a given load.
8. Measure the characteristics of Laser diode.
9. Measurement of Numerical Aperture of fiber cable.
10. Find the Intensity modulation of Laser output through an optical fiber.
11. Measurement of Data rate for Digital Optical link.
12. Measurement of losses for Optical link



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

IV ECE Regular Lab External Examinations Timetable (Offline)

A.Y: 2022-23

SEM: I

S.No.	Name of the Lab	Year/ Sec	Date & Time of the Lab Exam	Name of the Internal Examiners
1	Microwave & Optical Communications Lab (MW&OC Lab)	IV ECE-A	07.01.2023 (Saturday) 10:00 AM - 01:00 PM	Mrs. T. Bhavani/ Mrs. A. Sindhuja/ Mr. S. Naresh
		IV ECE-B	07.01.2023 (Saturday) 10:00 AM - 01:00 PM	
		IV ECE-C	07.01.2023 (Saturday) 01:00 PM - 04:00 PM	

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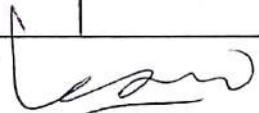
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING


IV ECE Regular Lab External Examiners from GNITC

A.Y: 2022-23

SEM: I

S.No.	Name of the Lab	Year/ Sec	Date & Time of the Lab Exam	Name of the Internal Examiners	Name of the External Examiners With Designation Contact number
1	Microwave & Optical Communications Lab (MW&OC Lab)	IV ECE-A	07.01.2023 (Saturday) 10:00 AM - 01:00 PM	Mrs.T.Bhavani/ Mrs.A.Sindhuj/ Mr.S.Naresh	Mr.D.Naresh Assistant Professor 9885248584
		IV ECE-B	07.01.2023 (Saturday) 10:00 AM - 01:00 PM		Mr.O.Ravinder Associate professor 6300481563
		IV ECE-C	07.01.2023 (Saturday) 01:00 PM - 04:00 PM		Mr. Krishna Kumar Assistant professor 9985565141


Head HOD ECE Department
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

LAB OCCUPANCY CHART

CLASS:IV-I B.Tech ECE-A,B&C

A.Y: 2022-23

Period/ Day	1	2	3	4	01:00 –	5	6	7
	9:30-10:30	10:30-11:20	11:20 – 12:10	12:10 – 1:00	01:30	1:30-2:20	2:20-3:10	3:10-4:00
MON					L		MW&OC LAB IV ECE-A	
TUE					U		MW&OC LAB IV ECE-B	
WED					N		MW&OC LAB IV ECE-C	
THURS					C		MW&OC LAB IV ECE-A	
FRI					H		MW&OC LAB IV ECE-B	
SAT							MW&OC LAB IV ECE-C	

HOD/ECE

Head of the Department

Electronics and Communication Engg. Dept.
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MICROWAVE & OPTICAL COMMUNICATIONS LAB

DO'S AND DON'TS

- All students must observe the dress code while in the laboratory
- Foods, drinks and smoking are NOT allowed
- All bags must be left at the indicated place.
- The lab time table must be strictly followed.
- Be PUNCTUAL for your laboratory session.
- Experiment must be completed within the given time.
- Noise must be kept to minimum.
- Workspace must be kept clean and tidy at all time.
- Handle all apparatus with care.
- All students are liable for any damage to equipment due to their own negligence.
- All equipment, apparatus, tools and components must be RETURNED to their original place after use.
- Students are strictly PROHIBITED from taking out any items from the laboratory.
- Report immediately to the lab supervisor if any injury occurred.
- Report immediately to the lab supervisor if any damages to equipment.

BEFORE LEAVING LAB

- Place the stools under the lab bench.
- Turn off the power to all instruments.
- Please check the laboratory notice board regularly for updates.



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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

MICROWAVE & OPTICAL COMMUNICATIONS LAB

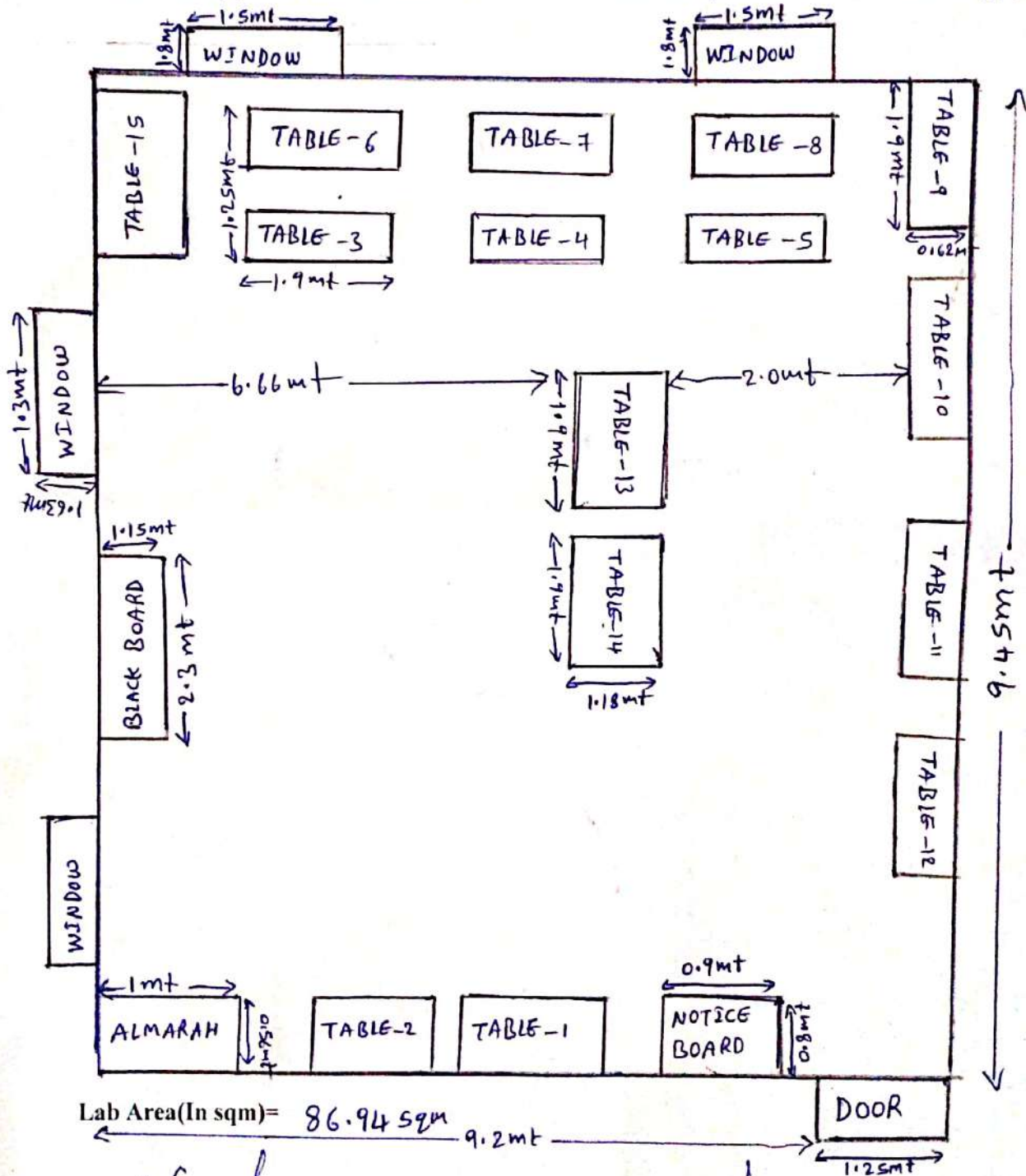
PHYSICAL LAB FLOOR PLAN

ROOM NO: A-116

BLOCK: A

FLOOR: 1st

DATE: 6/9/2021



Lab In charge *[Signature]*

HOD/ECÉ



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MICROWAVE & OPTICAL COMMUNICATIONS LAB

Lab Manual Link:

https://drive.google.com/file/d/1EKCBxHD5NLKD6p_V10F_pSaU_yPAom0r/view?usp=sharing

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY



Department of Electronics and Communication Engineering

Course Outcome Attainment (Internal Examination-1)

Name of the faculty : T.Bhavani A.Y 2022-23
 Branch & Section: ECE - B I Internal
 Course Name: MICROWAVE & OPTICAL COMMUNICATIONS LAB Year/Semester: IV/I

S.No	HT No.	A+A+CD+MG	T+P+C+R	DDE
Max. Marks ==>		5	5	15
1	19X31A0451	4	5	13
2	19X31A0452	5	4	11
3	19X31A0453	5	5	11
4	19X31A0454	3	5	13
5	19X31A0455	5	5	13
6	19X31A0456	5	5	12
7	19X31A0457	5	3	11
8	19X31A0458	5	5	13
9	19X31A0459	5	5	13
10	19X31A0460	3	4	10
11	19X31A0461	5	4	10
12	19X31A0462	5	3	12
13	19X31A0463	5	4	11
14	19X31A0464	4	4	11
15	19X31A0465	5	5	13
16	19X31A0467	4	3	11
17	19X31A0468	4	4	11
18	19X31A0469	5	4	10
19	19X31A0470	4	4	10
20	19X31A0471	3	4	10
21	19X31A0472	5	5	13
22	19X31A0473	5	5	14
23	19X31A0474	5	3	14
24	19X31A0475	5	5	9
25	19X31A0476	3	4	10
26	19X31A0477	5	5	12
27	19X31A0478	5	5	12
28	19X31A0479	5	3	11
29	19X31A0481	5	5	10
30	19X31A0482	5	5	13
31	19X31A0483	5	4	10
32	19X31A0484	3	5	12
33	19X31A0485	5	4	10
34	19X31A0486	5	3	11
35	19X31A0487	3	1	10
36	19X31A0488	5	5	12
37	19X31A0489	5	4	12
38	19X31A0490	5	3	13
39	19X31A0491	5	5	12
40	19X31A0492	5	5	12
41	19X31A0493	5	5	11
42	19X31A0494	5	5	13
43	19X31A0495	4	5	14
44	19X31A0496	5	4	10
45	19X31A0497	3	5	13
46	19X31A0498	5	4	10
47	19X31A0499	3	5	13
48	19X31A04A0	5	5	14
49	20X35A0411	5	5	14
50	20X35A0412	5	5	13
51	20X35A0413	5	5	11
52	20X35A0414	5	3	11
53	20X35A0415	5	4	11
54	20X35A0416	3	5	14
55	20X35A0417	5	5	14
56	20X35A0418	5	5	12
57	20X35A0419	3	5	11
58	20X35A0420	5	3	14

Target set by the faculty / HoD	3.00	3.00	9.00
Number of students performed above the target	58	57	58
Number of students attempted	58	58	58
Percentage of students scored more than target	100%	98%	100%

CO Mapping with Exam Questions:

CO - 1	y	y	y
CO - 2	y	y	y
CO - 3	y	y	y
CO - 4	y	y	y
CO - 5	y	y	y
CO - 6	y	y	y

% Students Scored >Target %	100%	98%	100%
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CO Attainment based on Exam Questions:

CO - 1	100%	98%	100%
CO - 2	100%	98%	100%
CO - 3	100%	98%	100%
CO - 4	100%	98%	100%
CO - 5	100%	98%	100%
CO - 6	100%	98%	100%

CO	Intrnal practical	DDE	Overall	Level
CO-1	99%	100%	100%	3.00
CO-2	99%	100%	100%	3.00
CO-3	99%	100%	100%	3.00
CO-4	99%	100%	100%	3.00
CO-5	99%	100%	100%	3.00
CO-6	99%	100%	100%	3.00

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal 1 Examination) = **3.00**

NOTE:

A+A+CD+MG : AIM+APPARATUS+CIRCUIT DIAGRAM+MODEL GRAPH

T+P+C+R : THEORY+PROCEDURE+CALCULATION+RESULT

DDE : Day to Day Evaluation

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY



Department of Electronics and Communication Engineering

Course Outcome Attainment (Internal Examination-2)

Name of the faculty : T.Bhavani A.Y 2022-23

Branch & Section: ECE - B II Internal

Course Name: MICROWAVE & OPTICAL COMMUNICATIONS LAB Semester: IV/I

S.No	HT No.	A+A+CD+MG	T+P+C+R	DDE
Max. Marks ==>		5	5	15
1	19X31A0451	5	5	13
2	19X31A0452	5	3	11
3	19X31A0453	5	5	11
4	19X31A0454	5	5	13
5	19X31A0455	5	3	13
6	19X31A0456	3	5	12
7	19X31A0457	5	5	11
8	19X31A0458	5	3	13
9	19X31A0459	5	5	13
10	19X31A0460	3	4	10
11	19X31A0461	5	4	10
12	19X31A0462	5	5	12
13	19X31A0463	5	3	11
14	19X31A0464	4	4	11
15	19X31A0465	5	5	13
16	19X31A0467	3	3	11
17	19X31A0468	4	3	11
18	19X31A0469	5	4	10
19	19X31A0470	4	4	10
20	19X31A0471	4	4	10
21	19X31A0472	5	5	13
22	19X31A0473	5	3	14
23	19X31A0474	3	5	14
24	19X31A0475	5	5	9
25	19X31A0476	5	4	10
26	19X31A0477	5	5	12
27	19X31A0478	5	5	12
28	19X31A0479	5	5	11
29	19X31A0481	3	5	10
30	19X31A0482	5	5	13
31	19X31A0483	4	4	10
32	19X31A0484	5	5	12
33	19X31A0485	5	4	10
34	19X31A0486	5	4	11
35	19X31A0487	3	1	10
36	19X31A0488	5	4	12
37	19X31A0489	5	5	12
38	19X31A0490	5	5	13
39	19X31A0491	5	5	12
40	19X31A0492	5	4	12
41	19X31A0493	5	5	11
42	19X31A0494	4	5	13
43	19X31A0495	5	5	14
44	19X31A0496	5	4	10
45	19X31A0497	5	5	13
46	19X31A0498	5	4	10
47	19X31A0499	5	5	13
48	19X31A04A0	4	5	14
49	20X35A0411	5	5	14
50	20X35A0412	5	5	13
51	20X35A0413	5	5	11
52	20X35A0414	5	4	11
53	20X35A0415	5	4	11
54	20X35A0416	4	5	14
55	20X35A0417	5	5	14
56	20X35A0418	5	5	12
57	20X35A0419	5	4	11
58	20X35A0420	5	3	14

Target set by the faculty / HoD	3.00	3.00	9.00
Number of students performed above the target	57	56	57
Number of students attempted	57	57	57
Percentage of students scored more than target	100%	98%	100%

CO Mapping with Exam Questions:

CO - 1	y	y	y
CO - 2	y	y	y
CO - 3	y	y	y
CO - 4	y	y	y
CO - 5	y	y	y
CO - 6	y	y	y

% Students Scored >Target %	100%	98%	100%
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CO Attainment based on Exam Questions:

CO - 1	100%	100%	100%
CO - 2	100%	98%	100%
CO - 3	100%	98%	100%
CO - 4	100%	98%	100%
CO - 5	100%	98%	100%
CO - 6	100%	98%	100%

CO	Intrnal practical	DDE	Overall	Level
CO-1	100%	100%	100%	3.00
CO-2	99%	100%	100%	3.00
CO-3	99%	100%	100%	3.00
CO-4	99%	100%	100%	3.00
CO-5	99%	100%	100%	3.00
CO-6	99%	100%	100%	3.00

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal 2 Examination) = **3.00**

NOTE:

A+A+CD+MG : AIM+APPARATUS+CIRCUIT DIAGRAM+MODEL GRAPH

T+P+C+R : THEORY+PROCEDURE+CALCULATION+RESULT

DDE : Day to Day Evaluation

SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY



Department of Electronics and Communication Engineering

Course Outcome Attainment

Name of the faculty T.Bhavani

Academic Year 2022-23

Branch & Section: ECE - B

Examination: I Internal

Course Name: MICROWAVE & OPTICAL

COMMUNICATIONS LAB

Year:IV-1

Semester: IV/I

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00	3.00	3.00	3.00	3.00
CO2	3.00	3.00	3.00	3.00	3.00
CO3	3.00	3.00	3.00	3.00	3.00
CO4	3.00	3.00	3.00	3.00	3.00
CO5	3.00	3.00	3.00	3.00	3.00
CO6	3.00	3.00	3.00	3.00	3.00
Internal & University Attainment:			3.00	3.00	
Weightage			25%	75%	
CO Attainment for the course (Internal, University)			0.75	2.25	
CO Attainment for the course (Direct Method)			3.00		

Overall course attainment level

3.00

