

Minutes of the online Board of studies meeting on 28-11-2020

Following members have attended the online meeting;

1.	Dr. Laxmi Shrivastava	Chairperson, Associate Professor and I/C Head
2.	Prof. Jyoti Singhai	RGPV nominee by Academic Council, Professor, MANIT, Bhopal
3.	Dr Alok Jain	V.C. Nominee, RGPV Professor, SATI, Vidisha
4.	Er. Gaurav Tripathi	Representative from industry/ corporate sector/ allied area External member, Sr. Enterprise Architect, HCL Technologies SEZ, Noida
5.	Er. Pankaj Agarwal	Alumni, External member, Assistant Engineer, UP Power Corporation Limited
6.	Prof. P. K. Singhal	Professor
7.	Dr. V. V. Thakare	Associate Professor
8.	Dr. R. P. Narwaria	Assistant Professor
9.	Dr. Karuna Markam	Assistant Professor
10.	Prof. Madhav Singh	Assistant Professor
11.	Prof. D. K. Parsediya	Assistant Professor
12.	All NPIU Faculty	Assistant Professor

Following external member could not attend the meeting:

1. Prof. N. S. Raghava, External Member, Professor, ECE Dept., DTU, Delhi

At the onset, the chairperson welcomed external members to the meeting of BOS and placed the agenda for the deliberation to the members. The following deliberations were made as per the items of circulated agenda:

Item 1: To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform, to be offered in *online mode under Departmental Elective (DE) category*, for credit transfer in the *VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session*

S.No	Category Code	Course Code	Name of The course	Duration of the Course in weeks	Course Registration		Name of the Mentor Faculty
					Start Date	End Date	
Electronics/Electronics & Telecommunication Engineering							
1.	DE	140851/ 200851	Modern Digital Communication techniques	12	09-11-2020	25-01-2021	Awadhesh Gupta
2.	DE	140852/ 200852	Mathematical methods and techniques in Signal Processing	12	09-11-2020	25-01-2021	Dr Ashish Gupta
3.	DE	140853/ 200853	Power Management Integrated Circuits	12	09-11-2020	25-01-2021	Dr Vikas Mahor

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Item 2: To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform to be offered (for students of other departments) in *online mode under Open Category(OC)* for credit transfer in the *VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session*

S.No	Category Code	Course Code	Name of The course	Duration of the Course in weeks	Course Registration		Name of the Mentor Faculty
					Start Date	End Date	
Electronics/Electronics & Telecommunication Engineering							
1.	Open Category (OC-4)		An introduction to Information Theory	12	09-11-2020	25-01-2021	Dr Karuna Markam
2.			Sensors and Actuators	12	09-11-2020	25-01-2021	Deepak Batham
3.	Open Category (OC-5)		Electronics equipment integration and Prototype building	08	09-11-2020	25-01-2021	Arpita Singhal
4.			Computer Vision and Image Processing - Fundamentals and Applications	12	09-11-2020	25-01-2021	Shambhu Kumar

Item 3: To propose the list of "Additional Courses" which can be opted for getting an
 (i) *Honours (for students of the host department)*
 (ii) *Minor Specialization (for students of other departments)*
[These will be offered through SWAYAM/NPTEL/MOOC based Platforms for the VI semester (for the batch admitted in 2018-19) and for VIII semester students (for the batch admitted in 2017-18)] applicable during January-June 2021 academic session

Category	Semester	Name of The course	Duration of the Course in weeks	Course Registration		Name of the Mentor Faculty
				Start Date	End Date	
Electronics/Electronics & Telecommunication Engineering (VI Semester)						
Honours	VI	Electromagnetic Waves in Guided and Wireless Media	08	09-11-2020	15-02-2021	Pooja Sahoo
	VI	Integrated Circuits, MOSFETs, Op-Amps and their Application	12	09-11-2020	25-01-2021	Rishabh Shukla
	VI	High Power multilevel converter	12	09-11-2020	25-01-2021	Praveen K Singh
Minors	VI	Integrated Circuits, MOSFETs, Op-Amps and their Application	12	09-11-2020	25-01-2021	Rishabh Shukla
	VI	High Power multilevel converter	12	09-11-2020	25-01-2021	Praveen K Singh

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Electronics/Electronics & Telecommunication Engineering (VIII Semester)						
Honours	VIII	Architectural Design of Digital Integrated Circuits	12	09-11-2020	25-01-2021	Madhav Singh
	VIII	Cloud Computing and Distributed Systems	08	09-11-2020	25-01-2021	Arpita Singhal
	VIII	Biomedical Signal Processing	12	09-11-2020	25-01-2021	Awadhesh Gupta
Minors	VIII	Microwave Integrated Circuits	08	09-11-2020	25-01-2021	Santosh Sharma
	VIII	Digital Signal Processing and its Applications	12	09-11-2020	25-01-2021	Dr R Dubey
	VIII	Computer Vision and Image Processing - Fundamentals and Applications	12	09-11-2020	25-01-2021	Shambhu Kumar

Item 4: To review and finalize the list and syllabi for all *Departmental Elective (DE) Courses* of *VI Semester to be offered to (the batch admitted in 2018-19)* under the flexible curriculum along with their COs ; {applicable during January-June 2021 academic session}

S.No	Category	Course Code	Course Name
1.	Departmental Electives (DE-1)	140611/200611	Optical Communication
2.		140612/200612	Antenna and Wave Propagation
3.		140613/200613	Telecom Switching and Networks

For Syllabus, refer Annexure I

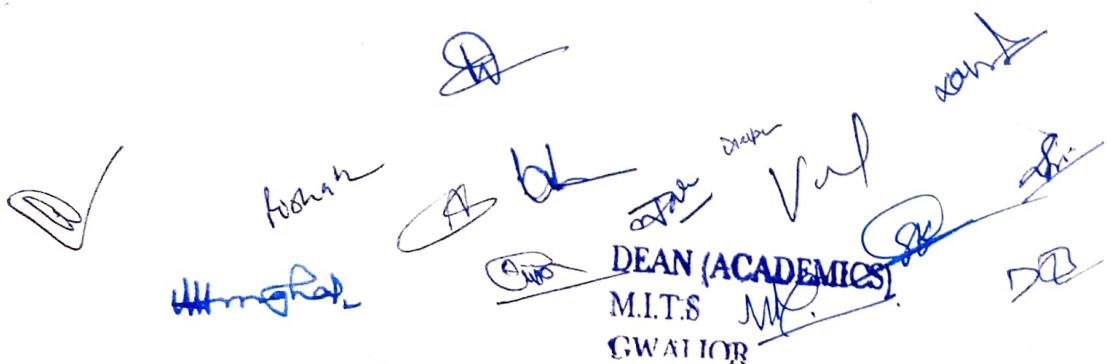
Item 5: To review and finalize the list of Courses from SWAYAM/NPTEL/MOOC Platform to be offered (for batch admitted in 2018-19) in online mode under *Departmental Elective (DE) Courses* for credit transfer in the *VI Semester* {applicable during January-June 2021 academic session}

S.No	Category Code	Course Code	Name of The course	Duration of the Course in weeks	Course Registration		Name of the Mentor Faculty
					Start Date	End Date	
Electronics/Electronics & Telecommunication Engineering							
1.	Departmental Elective (DE-2)	140651/200651	Spread Spectrum Communications and Jamming	12	09-11-2020	25-01-2021	Deep Kishore Parsedia
2.		140652/200652	Digital IC Design	12	09-11-2020	25-01-2021	Dr Vikas Mahor
3.		140653/200653	Fuzzy Sets, Logic and Systems & Application	12	09-11-2020	25-01-2021	Dr Vandana Vikas Thakare

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Item 6:	To review and finalize the Courses & Syllabi to be offered (<i>for batch admitted in 2018-19</i>) under the Open Category (OC) Courses for VI semester students of other departments along with their COs.																																				
	<table border="1"> <thead> <tr> <th>S.No</th> <th>Category</th> <th>Course Code</th> <th>Course Name</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td rowspan="2">Open Course (OC-1)</td> <td>900104</td> <td>Intelligent Control</td> </tr> <tr> <td>2.</td> <td>900105</td> <td>Embedded Systems</td> </tr> </tbody> </table>	S.No	Category	Course Code	Course Name	1.	Open Course (OC-1)	900104	Intelligent Control	2.	900105	Embedded Systems																									
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1.	Open Course (OC-1)	900104	Intelligent Control																																		
2.		900105	Embedded Systems																																		
	For Syllabus, refer <u>Annexure II</u>																																				
Item 7:	To review and finalize the Courses & Syllabi to be offered (<i>to the batch admitted in 2018-19</i>) under Departmental Core (DC) Courses for the IV&VI semester students along with their COs.																																				
	<table border="1"> <thead> <tr> <th>S.No</th> <th>Category</th> <th>Semester</th> <th>Course Code</th> <th>Course Name</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td rowspan="7">Departmental Core</td> <td>IV</td> <td>140401/200401</td> <td>Electronics-II</td> </tr> <tr> <td>2.</td> <td>IV</td> <td>140402/200402</td> <td>Analog Communication</td> </tr> <tr> <td>3.</td> <td>IV</td> <td>140403/200403</td> <td>Communication Networks</td> </tr> <tr> <td rowspan="2">4.</td> <td rowspan="2">IV</td> <td>140404</td> <td>Electronics Measurement and Instrumentation</td> </tr> <tr> <td>200404</td> <td>Stochastic Processes in Communication</td> </tr> <tr> <td>5.</td> <td>VI</td> <td>140601</td> <td>Microprocessor & Interfacing</td> </tr> <tr> <td>6.</td> <td>VI</td> <td>140602/200601</td> <td>Digital Signal Processing</td> </tr> <tr> <td>7.</td> <td>VI</td> <td>200602</td> <td>Data Communication</td> </tr> </tbody> </table>	S.No	Category	Semester	Course Code	Course Name	1.	Departmental Core	IV	140401/200401	Electronics-II	2.	IV	140402/200402	Analog Communication	3.	IV	140403/200403	Communication Networks	4.	IV	140404	Electronics Measurement and Instrumentation	200404	Stochastic Processes in Communication	5.	VI	140601	Microprocessor & Interfacing	6.	VI	140602/200601	Digital Signal Processing	7.	VI	200602	Data Communication
S.No	Category	Semester	Course Code	Course Name																																	
1.	Departmental Core	IV	140401/200401	Electronics-II																																	
2.		IV	140402/200402	Analog Communication																																	
3.		IV	140403/200403	Communication Networks																																	
4.		IV	140404	Electronics Measurement and Instrumentation																																	
			200404	Stochastic Processes in Communication																																	
5.		VI	140601	Microprocessor & Interfacing																																	
6.		VI	140602/200601	Digital Signal Processing																																	
7.	VI	200602	Data Communication																																		
	For Syllabus, refer <u>Annexure III</u>																																				
Item 8:	To review and finalize the Scheme & Syllabi (I & II semester) of the <u>NEW B. Tech.</u> programme(s) to be started by the departments w.e.f. the batch admitted in 2020-21 Scheme: <u>Annexure IV</u> Syllabus: <u>Annexure V</u>																																				
Item 12:	To identify gaps in CO attainment levels for Jan-June 2020 semester and propose corrective measures for improvement Direct CO attainment: <u>Annexure VI</u> Gaps in CO attainment: <u>Annexure VII</u>																																				
Item 13:	To prepare and propose the equivalence list of courses for B. Tech programmes (for 2017-18, 2018-2019, 2019-2020 & the 2020 admitted batch) List of Equivalence: <u>Annexure VIII</u>																																				
Item 14:	Any other matter: <u>Annexure IX</u>																																				



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Scheme of Examination (B.Tech. Electronics Engineering)

VI Semester *[For batches admitted in Academic Session 2018-19 onwards]*

S. No	Subject Code	Category	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours per week			Total Credits
				Theory Slot			Practical Slot			L	T	P	
				End Sem.	Mid Sem Exam.	Quiz/Assignment	End Sem.	Lab work & Sessional					
1.	140601	DC	Microprocessors & Interfacing (DC-13)	70	20	10	30	20	150	2	1	2	4
2.	140602	DC	Digital Signal Processing (DC-14)	70	20	10	-	-	100	3	1	-	4
3.	1406XX	DE	DE-1*	70	20	10	-	-	100	4	-	-	4
4.	1406XX	DE	DE-2*	70	20	10	-	-	100	4	-	-	4
5.		OC	OC-1*	70	20	10	-	-	100	2	1	-	3
6.	100007	MC	Disaster Management (MC)	70	20	10	-	-	100	3	-	-	3
7.	140606	DLC	Minor Project-II (DLC-5)	-	-	-	50	50	100	-	-	4	2
Total				420	120	60	80	70	750	18	3	6	24

Summer Internship-III (On Job Training) for Four weeks duration: Evaluation in VII Semester

Additional Courses for obtaining Honours or minor Specialization by desirous students

Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization

* At least one of these courses must be run through SWAYAM/NPTEL/ MOOC

Department Electives-1 (DE-1) 1406XX	Optical Communication 140611	Antennas and Wave Propagation 140612	Telecom Switching and Networks 140613
Department Electives-2 (DE-2) (MOOC) 1406XX	Spread Spectrum Communications and Jamming 140651	Digital IC Design 140652	Fuzzy Sets, Logic and Systems & Application 140653

Open Course-1 (OC-1)	Intelligent Control (900104)	Embedded Systems (900105)
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Honors	Advanced Power Electronics & Control	Integrated Circuits, MOSFETs, Op-Amps and their Application	High Power multilevel converter
Minors	Integrated Circuits, MOSFETs, Op-Amps and their Application	High Power multilevel converter	

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Scheme of Examination B.Tech. VI Semester (ET)

[For batches admitted in Academic Session 2018-19 onwards]

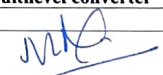
S. No	Subject Code	Category	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours per week			Total Credits
				Theory Slot			Practical Slot			L	T	P	
				End Sem.	Mid Sem Exam.	Quiz/Assignment	End Sem.	Lab work & Sessional					
1.	200601	DC	Digital Signal Processing (DC-13)	70	20	10	30	20	150	2	1	2	4
2.	200602	DC	Data Communication (DC-14)	70	20	10	-	-	100	4	-	-	4
3.	2006XX	DE	DE-1*	70	20	10	-	-	100	4	-	-	4
4.	2006XX	DE	DE-2*	70	20	10	-	-	100	4	-	-	4
5.	2006X5	OC	OC-1*	70	20	10	-	-	100	2	1	-	3
6.	100007	MC	Disaster Management (MC)	70	20	10	-	-	100	3	-	-	3
7.	200606	DLC	Minor Project-II (DLC-5)	-	-	-	50	50	100	-	-	4	2
Total				420	120	60	80	70	750	19	2	6	24
Summer Internship-III (On Job Training) for Four weeks duration: Evaluation in VII Semester													
Additional Courses for obtaining Honours or minor Specialization by desirous students			Permitted to opt for <u>maximum two additional courses</u> for the award of Honours or Minor specialization										

* At least one of these courses must be run through SWAYAM/NPTEL/ MOOC

Department Electives-1 (DE-1) 2006XX	Optical Communication 200611	Antennas and Wave Propagation 200612	Telecom Switching and Networks 200613
Department Electives-2 (DE-2) (MOOC) 2006XX	Spread Spectrum Communications and Jamming 200651	Digital IC Design 200652	Fuzzy Sets, Logic and Systems & Application 200653

Open Course-1 (OC-1)	Intelligent Control (900104)	Embedded Systems (900105)
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Honors	Advanced Power Electronics & Control	Integrated Circuits, MOSFETs, Op-Amps and their Application	High Power multilevel converter
Minors	Integrated Circuits, MOSFETs, Op-Amps and their Application	High Power multilevel converter	


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Scheme of Examination
B.Tech. VIII Semester (Electronics Engineering)

For batches admitted in Academic Session 2017-18

S.No.	Subject Code	Category	Subject Name & Title	Maximum Marks Allotted				Total Marks	Contact Hours per week			Total Credits	
				Theory Slot			Practical Slot		L	T	P		
				End Sem.	Mid Sem. Exam	Quiz/ Assignment	End Sem.						Term Work Lab Work & Sessional
1.	1408XX	DE	DE-5*	70	20	10	-	-	100	2	-	-	2
2.		OC	OC-4*	70	20	10	-	-	100	2	-	-	2
3.		OC	OC-5*	70	20	10	-	-	100	2	-	-	2
4.	140804	DLC	Internship/ Project (DLC-9)	-	-	-	250	150	400	-	-	6	3
5.	140805	-	Innovative Technical Contribution [#]	-	-	-	-	50	50	-	-	2	1
Total				210	60	30	250	200	750	6	-	8	10
Additional Course for Honours or minor Specialization			Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization										

*All of these courses will run through SWAYAM/NPTEL/ MOOC

[#]Evaluation will be based on participation/laurels brought by the students to the institution in national/state level technical events during the complete tenure of the UG program

Department Electives-1 (DE-5) (1408XX)	Modern digital communication techniques (140851)	Mathematical methods and techniques in Signal Processing (140852)	Power Management Integrated Circuits (140853)
Open Course-4 (OC-4)	Linear dynamical systems	Sensors and Actuators	
Open Course-5 (OC-5)	Electronics equipment integration and Prototype building	Computer Vision and Image Processing - Fundamentals and Applications	

Honors	Architectural Design of Digital Integrated Circuits	Cloud Computing and Distributed Systems	Biomedical Signal Processing
Minors	Microwave Integrated Circuits	Digital Signal Processing and its Applications	Computer Vision and Image Processing - Fundamentals and Applications


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Scheme of Examination

B.Tech. VIII Semester (Electronics and Telecommunication Engineering)

For batches admitted in Academic Session 2017-18

S.No.	Subject Code	Category	Subject Name & Title	Maximum Marks Allotted				Total Marks	Contact Hours per week			Total Credits	
				Theory Slot			Practical Slot		L	T	P		
				End Sem.	Mid Sem. Exam	Quiz/ Assignment	End Sem.						Term Work
													Lab Work & Sessional
1.	2008XX	DE	DE-5*	70	20	10	-	-	100	2	-	-	2
2.		OC	OC-4*	70	20	10	-	-	100	2	-	-	2
3.		OC	OC-5*	70	20	10	-	-	100	2	-	-	2
4.	200804	DLC	Internship/ Project (DLC-9)	-	-	-	250	150	400	-	-	6	3
5.	200805	-	Innovative Technical Contribution#	-	-	-	-	50	50	-	-	2	1
Total				210	60	30	250	200	750	6	-	8	10
Additional Course for Honours or minor Specialization			Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization										


*All of these courses will run through SWAYAM/NPTEL/ MOOC

#Evaluation will be based on participation/laurels brought by the students to the institution in national/state level technical events during the complete tenure of the UG program

Department Electives-1 (DE-5) (2008XX)	Modern digital communication techniques (200851)	Mathematical methods and techniques in Signal Processing (200852)	Power Management Integrated Circuits (200853)
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Open Course-4 (OC-4)	Linear dynamical systems	Sensors and Actuators	
Open Course-5 (OC-5)	Electronics equipment integration and Prototype building	Computer Vision and Image Processing - Fundamentals and Applications	

Honors	Architectural Design of Digital Integrated Circuits	Cloud Computing and Distributed Systems	Biomedical Signal Processing
Minors	Microwave Integrated Circuits	Digital Signal Processing and its Applications	Computer Vision and Image Processing - Fundamentals and Applications


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Scheme of Examination

GROUP Y: I Semester

B. Tech. I Semester (Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication, Chemical)

For batches admitted in academic session 2020 – 21 onwards

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Hours per Week			Total Credits
				Theory Slot			Practical Slot			L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work / Sessional					
1.	100013	BSC	Engineering Physics	60	20	20	60	40	200	2	1	2	4
2.	100020	ESC	Basic Civil Engineering & Mechanics	60	20	20	-	-	100	3 2	1	-	3
4.	100021	ESC	Basic Mechanical Engineering	60	20	20	-	-	100	3 2	1	-	3
3.	100022	ESC	Basic Electrical & Electronics Engineering	60	20	20	60	40	200	2	1	2	4
5.	100023	ESC	Basic Computer Engineering	60	20	20	60	40	200	2	1	2	4
6.	140111	ESC	Electronics Workshop	-	-	-	60	40	100	-	-	2	1
Total				300	100	100	240	160	900	12	3	8	19
Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People. Visits to local Areas, Familiarization to Department /Branch & Innovations.													
NSS / NCC				Qualifier									

GROUP X: (Civil, Mechanical, Electrical, Chemical, and Automobile)

GROUP Y: (Electronics, Computer Science & Engineering, Information Tech. Electronics & Telecommunication); 01 Theory Period=1 Credit; 02 Practical Periods =1 Credit

15/12/2020
DEAN (ACADEMICS)
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B.Tech. II Semester (Electronics Engineering/ Electronics and Telecommunication Engineering)

Subject Code	Category Code	Subject Name	Theory Slot			Practical Slot		Total Marks	Contact Hr/week			Total Credits
			End Sem Marks	Mid Sem Marks	Quiz/ Assignment Marks	End Sem Mark	Lab work & Sessional Mark		L	T	P	
140211/200211	DC	Electronics Devices	60	20	20	60	40	200	2	1	2	4

Electronics Devices (140211/200211)

Course Objective: To understand construction, principal and operation of different semiconductor devices.

Unit I: Fundamental of Electronic Devices: Elemental & Compound Semiconductor Materials , Bonding Forces and Energy Bands in Intrinsic and Extrinsic Silicon, Charge Carrier in Semiconductors , Carrier Concentration, Extrinsic Semiconductor, Hall Effect, Mechanism of Current Flow, Drift Current, Diffusion Current, Einstein Relation, Continuity Equation.

Unit II: Semiconductors Diodes: P-N Junction properties, Diode Characteristics, Equilibrium condition, biased junction, Steady state condition, P-N Junction breakdown mechanism, Capacitance of junction barrier, Diode circuit parameters, Basic circuits of Rectifier, Clippers and Clampers.

Unit III: Bipolar Junction Transistors: Construction, basic operation, current components and equations, CB, CE and CC configuration, input and output characteristics, Early effect, Region of operations: active, cut-off and saturation region.

Unit IV: Field effect transistors: Construction and characteristics of JFET, working principle of JFET.MOSFET construction and characteristics, MOSFET enhancement and depletion mode.

Unit V: Power Electronics Devices: Basic principle and working of SCR, IGBT, Uni-junction Transistor (UJT) and Thyristors. UJT: Principle of operation, characteristics.

Text Books:

- 1.Electronics Devices and Circuits: Boylested & Nashelsky, 11th Edition, Pearson Education India
- 2.Electronic devices and circuits: S. Salivahanan, 2nd Edition, Tata McGraw-Hill Education, 2011.
- 3.Microelectronic Circuits: Theory and Application: Sedra & Smith, 7th Edition, Oxford University Press.

Reference Books:

- 1.Micro Electronics: Millman, & Grabel, 2nd Edition, McGraw Hill Education
- 2.Integrated Electronics: Millman & Halkias, McGraw Hill Education.

Course Outcomes

After the completion of this course students will be able to:

- CO1. **Analyze** the properties of semiconductor materials.
- CO2. **Understand** construction and working of different diodes.
- CO3. **Analyze** the operation of Bi-polar junction transistors.
- CO4. **Examine** the working of Field Effect Transistors.
- CO5. **Analyze** the working of power electronics devices.

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B.Tech. II Semester (Electronics Engineering/ Electronics and Telecommunication Engineering)

Subject Code	Category Code	Subject Name	Theory Slot			Practical Slot		Total Marks	Contact Hr/week			Total Credits
			End Sem Marks	Mid Sem Marks	Quiz/ Assignment Marks	End Sem Mark	Lab work & Sessional Mark		L	T	P	
140212/200212	DC	Engineering materials	60	20	20	-	-	100	3	1	-	4

Engineering Materials (140212/200212)

Course Objective: To introduce the student with different materials and their characteristics used in manufacturing various electrical and electronics equipment.

Unit 1 Conducting materials: Classification of Engineering Materials, Crystal Structure of The Material, Crystal System, Unit Cells and Space Lattices and Defects. Conducting Material- Properties of Conductors, Characteristics of Good Conductor Material, Commonly used Conducting Materials, Conducting Materials for Overhead Lines, Types of Conductor and Applications.

Unit 2 Dielectric materials: Dielectric Strength, Factors affecting Dielectric Strength, Dielectric Loss, Dissipation Factor, Factors affecting Dielectric Loss, Permittivity & Polarization, Conduction through Dielectric. Application of Dielectric. Different Types of Capacitors and Materials used for them. Piezoelectricity & Ferro Electricity

Unit 3 Semi Conducting Material: Introduction - Semi-conductors and their properties, Different Semiconducting materials (Silicon and Germanium) used in manufacture of various Semiconductor devices (i.e p-type and n-type semiconductors), Materials used for electronic components like Resistors, Capacitors, Diodes, Transistors and Inductors etc.

Unit 4 Insulating Material: Plastics- Definition and classification, Thermosetting Materials, Thermoplastic Materials; Natural Insulating materials, properties and their applications; Gaseous Materials – Ceramics-properties and applications.

Unit 5 Magnetic Material: Introduction and classification - Ferromagnetic Materials, Permeability, BH curve, Magnetic Saturation, Hysteresis loop (including) coercive force and Residual Magnetism, Concept of Eddy Current and Hysteresis loss, Curie temperature, Magnetostriction effect, Soft Magnetic Materials, Hard Magnetic materials, Hall effect and its applications.

Text Books:

1. SK Bhattacharya, "Electrical and Electronic Engineering Materials" 1st edition, Khanna Publishers, New Delhi, 2006.
2. A.J. Dekker "Electrical Engineering Materials", Reprint 1st edition, PHI, 2006.

Reference Books:

1. Sahdev, "Electrical Engineering Materials", Unique International Publications.
2. C. S. Indulkar & S. Thiruvengadam, "Electrical Engineering Materials", Reprint 1st edition, 2013, S. Chand & Com. Ltd, New Delhi -55
3. S.P. Seth, P.V. Gupta "A course in Electrical Engineering Materials", 4th Edition, 2017, Dhanpat Rai & Sons.

Course Outcome:

After successful completion of the course, student will be able to:

- CO 1. Classify engineering materials.
- CO 2. Analyze the characteristics of dielectric materials.
- CO 3. Analyze the characteristics of semi-conducting materials.
- CO 4. Identify insulating materials for special purposes.
- CO 5. Classify magnetic materials with reference to their properties.

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B.Tech. I Semester (Electronics Engineering/ Electronics and Telecommunication Engineering)

Subject Code	Category Code	Subject Name	Theory Slot			Practical Slot		Total Marks	Contact Hr/week			Total Credits
			End Sem Marks	Mid Sem Marks	Quiz/ Assignment Marks	End Sem Mark	Lab work & Sessional Mark		L	T	P	
140111/200111	ESC	Electronics Workshop	-	-	-	60	40	100	-	-	2	1

Subject Name: Electronic Workshop

Subject Code: 140111/200111

Course Objectives:

Students will be able to learn the practical aspects of the basic electronic components, instruments and PCB designing.

List of Experiment

1. Study of basic electronic components
2. Study of bread board, power supply, digital storage oscilloscope and multimeter.
3. Identification of Polarity, and cut in voltage of various electronics components.
4. Phase shift measurement using Lissajous Pattern.
5. Study of basic steps involved in PCB designing.
6. Fabrication of small electronic circuits.

Course Outcome:

After completing the course, students will be able to

CO1. Evaluate the parameters of basic electronic components.

CO2. Calculate the phase shift between two waveforms.

CO3. Fabricate small electronics circuits.

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Department of Electronics Engineering

Direct CO Attainment for the session January - June 2020

Semester	Course	CO	CO Statement	CO Attainment	Target CO Attainment	Status
Semester - IV	14040/200401 Electronics-II	CO1	Design the Tuned Amplifier with the given Parameters.	72.6	70	Achieved
		CO2	Differentiate between the Voltage and Power Amplifier.	73.3	70	Achieved
		CO3	Design the Multistage Amplifiers.	70.8	70	Achieved
		CO4	Design the Various Electronics Circuits using Operational Amplifier.	83.6	70	Achieved
		CO5	Realize Active Filters According to Butterworth and Chebyshev Polynomials.	92.27	70	Achieved
	140402/200402 Analog Communication	CO1	Apply the Concept of Multiplexing and Modulation in Communication Engineering	68.75	70	Not Achieved
		CO2	Analyze the Amplitude Modulation and Angle Modulation with their Waveforms	79.38	70	Achieved
		CO3	Explain the Generation and Detection for Various Modulation Techniques.	76.75	70	Achieved
		CO4	Explain the Working of Transmitter and Receiver.	87.38	70	Achieved
		CO5	Evaluate the Statistical Parameters for General PDF/CDF.	67.75	70	Not Achieved
		CO6	Evaluate the Effects of Noise on Different Modulation Techniques.	82.5	70	Achieved
	140403/200403 Communication Network	CO1	Compute the Various Parameters of Different Passive Networks.	0	NA	-
		CO2	Design the Symmetrical and Asymmetrical Attenuators.	0	NA	-
		CO3	Synthesize the Network for A Given Positive and Minimum Positive Real Function.	96.88	70	Achieved
		CO4	Design Passive Filters for the Given Specifications	73.46	70	Achieved
		CO5	Analyze the Characteristics of Various Transmission Lines.	55.74	70	Not Achieved
		CO6	Calculate the Impedance and SWR Graphically /Analytically.	54.98	70	Not Achieved
	140404 Electronics Measurement	CO1	Discuss Performance Characteristics of an Instrument	87.13	70	Achieved
		CO2	Explain the Working Principle and Applications of Bridges and Transducers .	79.8	70	Achieved

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	and Instrumentation	CO3	Analyze the Working Principle of Digital Instruments and Display Devices	89.4	70	Achieved
		CO4	Measure Different Parameters using Various Circuits.	80.675	70	Achieved
		CO5	Design of A/D and D/A Converter.	76.8	70	Achieved
		CO1	Examine the Concept of Different Layers in Data Communication Networks	68.75	70	Not Achieved
Semester - VI	200602 Data Communication	CO2	Analyze the Error and Flow Control in Communication Network	79.38	70	Achieved
		CO3	Explain the Concepts of MAC Layer	76.75	70	Achieved
		CO4	Identify the Different Type of Routing Used in IP	87.38	70	Achieved
		CO5	Discuss the Transport Mechanism in TCP/UDP	67.75	70	Not Achieved
	140601 Microprocessor and Interfacing	CO1	Explain the Architecture and Organization of 8085 Microprocessors.	70.5	70	Achieved
		CO2	Develop Assembly Language Programming Skill for 8085.	68.25	70	Not Achieved
		CO3	Design the Interfacing Circuitry of Memory and I/O Devices Using Interfacing Chips/Pics with 8085.	65.30	70	Not Achieved
		CO4	Discuss the Architecture and Organization of 8086 Microprocessors.	78.3	70	Achieved
		CO5	Describe the Instruction Set and Architecture of 8051 Microcontroller.	84.7	70	Achieved
		CO1	Analyze Discrete Time System using Transform Methods.	88.77	75	Achieved
	140602 Digital Signal Processing	CO2	Compute DFT Using FFT Algorithms.	47.5	70	Not Achieved
		CO3	Design IIR Filters.	73.25	70	Achieved
		CO4	Design FIR Filters.	96	80	Achieved
		CO5	Apply the Concept of Multi-Rate Signal Processing in Practical Applications.	92.75	80	Achieved
	140603 Optical Communication (DE-1)	CO1	Explain the Basic Elements of Optical Fiber Transmission.	79.3	70	Achieved
		CO2	Discuss Fiber Fabrication, Splicing and Optical Connectors.	73	70	Achieved
		CO3	Describe the Working of Optical Sources and Optical Detectors.	77.5	70	Achieved
		CO4	Calculate the Channel Impairments Like Losses and Dispersion.	73.5	70	Achieved
		CO5	Discuss Coherent Optical Transmission System and Optical Networks.	77.75	70	Achieved
		CO1	Evaluate Various Parameters of the Antenna.	79	70	Achieved
	140613 Antenna					

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	and Wave Propagation(DE-1)	CO2	Analyze the Design Parameters and Radiation Mechanism of Wire Antennas.	73	70	Achieved
		CO3	Design Antenna Array for the Given Radiation Characteristics.	72	70	Achieved
		CO4	Analyze the Design Parameters and Radiation Characteristics of Aperture and Special Antennas.	79	70	Achieved
		CO5	Describe Effects of Earth and its Atmosphere on Radio Wave Propagation.	86	70	Achieved
	140615 OC-1 (Intelligent Control)	CO1	Explain the Fundamental Principle Behind Adaptive Control.	75.38	70	Achieved
		CO2	Estimate Various Parameter of Control System Using Artificial Neural Network	71.87	70	Achieved
		CO3	Apply the Concept of Artificial Neural Network to the Field of Control	73.25	70	Achieved
		CO4	Optimize the Throughput of the System using Optimization Methods Like Genetic Algorithm	78.50	70	Achieved
		CO5	Design Fuzzy Logic Based Control System	76.75	70	Achieved
	140605 OC-2 (Embedded System)	CO1	Explain the Architecture of Embedded System and 8051	77.11	70	Achieved
		CO2	Develop Assembly Language Programming Skill for 8051	75.62	70	Achieved
		CO3	Analyze the Concept of Timer/Counters , Serial Communication and Interrupt Handling Process of 8051 Microcontroller	76.12	70	Achieved
		CO4	Interface Memory and I/O Devices with 8051 Microcontroller	88	70	Achieved
CO5		Interface Arduino with LED, Switches, LDR, PWM 16 X 2 LCD, Serial , L-293D For Motor Interfacing ADC.	89.5	70	Achieved	
Semester - VIII	BELL/BETL 801 Fiber Optics & Optical Communication	CO1	Learn the Basic Elements of Optical Fiber Transmission Link, Fiber Modes Configurations and Fabrication Techniques.	99	70	Achieved
		CO2	Classify Various Optical Sources, Fiber Splicing Techniques, Optical Connectors with their Principles	81.75	70	Achieved
		CO3	Analyze Different Optical Receivers and their Noise Performances	73.87	70	Achieved
		CO4	Calculate the Channel Impairments Like Losses and Dispersion	75.87	70	Achieved
		CO5	Discuss Coherent Optical Transmission System. the	76.62	70	Achieved

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		Installation and Performance Verification of Digital Optical Fiber Link			
	CO6	Discriminate Between Different Amplifiers and Learn Variety of Networking Aspects, FDDI, SONET, WDM	32	70	Not Achieved
BELL/BETL 802 Satellite Communication	CO1	Explain Basic Concepts and Terminologies of Satellite Communication	85	70	Achieved
	CO2	Calculate the Link Power Budget.	72	70	Achieved
	CO3	Analyze the Different Multiple Access Schemes for Satellite Communication.	80.6	70	Achieved
	CO4	Classify Different Propagation Effects in Satellite	75	70	Achieved
	CO5	Solve Problems Related to Channel Coding Techniques.	60	70	Not Achieved
	CO6	Distinguish Different Satellite System	63	70	Not Achieved
BELL/BETL 803 TV and RADAR Engineering	CO1	Explain the Various Components of the Composite Video Signal, TV Camera Tube, and Picture Tube.	74.4	70	Achieved
	CO2	Characterize Various Types of Monochrome and Color TV Systems.	85.8	70	Achieved
	CO3	Analyze Basic Factors Required for Successful Transmission and Reception of TV Signals	67	70	Not Achieved
	CO4	Explain the Advanced Topics in Digital TV and High Definition TV	95	70	Achieved
	CO5	Evaluate the Various Performance Factor Related to the RADAR.	72.4	70	Achieved
	CO6	Explain Target Detection and Tracking Using RADAR Systems.	75.3	70	Achieved
BELL/BETL 804 Neural Networks and Fuzzy Systems	CO1	Explain the Basic Concepts of Neural Networks.	92.5	65	Achieved
	CO2	Analyze the Concept of Human Neural Structure and ANN.	86	65	Achieved
	CO3	Analyze the Various Feed Forward/Feedback Neural Networks.	65	65	Achieved
	CO4	Examine Different Learning Methodologies	74	65	Achieved
	CO5	Explain the Concept of Fuzziness Involved in Various Systems and Fuzzy Set Theory.	62.5	65	Not Achieved

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ANNEXURE VII

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Department of Electronics Engineering

List of subjects and their CO whose target levels are not achieved (Session January-June 2020):

Semester	Subject Code	Subject Name	CO attainment (Target not Achieved)
IV	140402/200402	Analog Communication	CO1,CO5
	140403/200403	Communication Network	CO5,CO6
VI	200602	Data Communication	CO1,CO5
	140601	Microprocessor and Interfacing	CO2,CO3
	140602	Digital Signal Processing	CO2
VIII	BELL/BETL 801	Fiber Optics & Optical Communication	CO6
	BELL/BETL 802	Satellite Communication	CO5,CO6
	BELL/BETL 803	TV and RADAR Engineering	CO3
	BELL/BETL 804	Neural Networks and Fuzzy Systems	CO5

Action taken in respect to not achieved CO's are as follows:

- Additional Classes which will focused on specific CO
- More tutorials
- Solutions of previous year question papers
- Additional classes by expert
- Take care of CO distribution during question paper setting
- Better attainment of these CO can be achieved by improving their weightage in question paper


Dr. Laxmi Shrivastava
I/C HOD



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Department of Electronics Engineering

Equivalence of Subjects

S. No.	Year	Subject Code & Title
1.	2017-18	NIL
2.	2018-19	NIL
3.	2019-20	NIL

Dr. Laxmi Shrivastava
I/C HOD

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