

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)



BOS minutes
Oct. 2018

DEPARTMENT
OF
ELECTRONICS ENGINEERING

BOARD OF STUDIES

FLEXIBLE CURRICULUM
SCHEME AND SYLLABUS
FOR
B.E. ELECTRONICS ENGINEERING
2018

Department of Electronics Engineering

Date: 06/10/2018

Minutes of Meeting

The meeting of the Board of Studies of Electronics department held on 06.10.2018 at 11.00 AM in the department of Electronics Engineering of M.I.T.S., Gwalior.

The Agenda for the meeting was as follows:-

- Item 1: To frame the COs for all core courses from V Semester to VIII Semester to be offered under the Flexible Curriculum based on the present needs of stakeholders and society.

The CO's of all core subjects from V to VIII semester in flexible scheme were discussed and finalized. The CO's finalization is based on the blooms taxonomy. It is taken into consideration that all CO's are of higher order thinking. While framing the COs feedback from stakeholders is also been considered.

- Item 2: To propose the list of Departmental Electives[#] to be offered, under the Flexible Curriculum, semester wise keeping in view the latest developments and trends/thrust areas.

The Departmental Electives were discussed and finalized. The departmental electives are decided taking into consideration the current needs of research industries. The specialization of faculties is also taken into consideration. The subjects are correlated to each other, some tracks are also planned in the departmental electives to make students specialized in respective stream. Four tracks have been frozen for Electronics Engineering viz Communication Engineering, Microwave Engineering, VLSI, Instrumentation and Control Engineering. Three tracks have been frozen for Electronics and Telecommunication Engineering named Communication Engineering & Signal Processing, Microwave Engineering, and VLSI. If a student prefers a specific track, he or she will be specialized in that particular area.

- Item 3: To propose a list of Open Elective Courses (Lab/theory courses for all branches) to be offered which have inter-departmental interest and relevance.

The open Electives were discussed and finalized. Open electives are decided on the basis of inter-disciplinary approach, and the availability of experts have also been considered. The pre-requisites were also discussed which student must know in advance before opting that particular open elective. Open electives are decided in such a manner so that students will get inter-disciplinary projects as well as inter-disciplinary internship.

- Item 4: To analyze question papers for Academic Year 2017-18 on the basis of COs and other parameters, separately.

Question paper analysis for examination 2017-18 was presented and it was observed that some COs could not be touched in few question papers. The toughness level of question paper has also been analyzed on the basis of content being asked. It is decided that the question paper should be balanced enough so that it covers complete syllabus in respective to each CO's to improve the CO attainment level. It is also been analyzed that the COs have

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been taken into consideration while framing question papers. The analysis is also done on the basis of percentage of theory and numerical question been asked in the question paper. The three toughness levels have been decided for the question paper viz Easy, Moderate, Tough.

- *Analysis of Question Paper*
- *Analysis of Question Paper with COs*

Item 5: To critically review the COs and their attainments for all courses beginning with the Academic Year (2014-15) to (2018-19).

COs of all the subjects were reviewed and finalized. COs are based on the upper level of Blooms taxonomy. Course outcomes are decided to explain standards, to motivate students, and to improve.

Item 6: To Identify gaps in CO attainment levels for Academic Year 2017-18 and propose corrective measures for improvement.

CO attainment levels for academic year 2017-18 were presented and little gaps were observed, and analyzed. To overcome the gaps, it was suggested to generalize the COs so that balanced question papers could be set. The assessment of COs are of two types; Direct attainment, and Indirect attainment. Direct attainment is through question paper. Randomly, sample answer sheets are taken to determine the Direct CO attainment. Mid semester, and Final exam answer books both are considered while calculating Direct CO attainment. Indirect attainment is on the basis of feedbacks taken through moodle from stakeholders.

Item 7: To set attainment targets for all COs for courses being offered in the Academic Year 2018-19.

Previous year CO attainment has been discussed. It is recommended that CO attainment of each subject should be 5% higher than the previous semester in next coming examination. Based on the previous COs attainment of year 2017-18, the CO attainment target is set for academic year 2018-19.

Item 8: To propose "Equivalence of Subjects" for all courses running in the various schemes.

Equivalence of Old Subjects were discussed and recommended for approval. The syllabus of old subjects with similar syllabus content and different codes has been compared and with the variation of 10-15% is proposed for the equivalence of subjects.

Item 9: To review and submit complete syllabi and scheme separately for the 3 schemes which are running presently.

- *Batch 2014-18 (Codes beginning with CEL/MEL/EEL/EII/CSL.....etc)*
- *Batches 2015-19 & 2016-2020 (Codes beginning with BCEL/BMEL/BEEL/BELL/BCSL.....etc)*
- *Batch 2017-2021 & Batch 2018-2022 (Six digit codes; upto IV semester only)*

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The Complete syllabi of currently running schemes is reviewed. The scheme for 2015-2019 batch is CBCS. The scheme for 2016-2020 batch is also CBCS. The scheme for 2017-21 is flexible scheme. All schemes are compared with respect to syllabus and syllabus for flexible scheme is finalized.

Item 10: Other matters, if any.

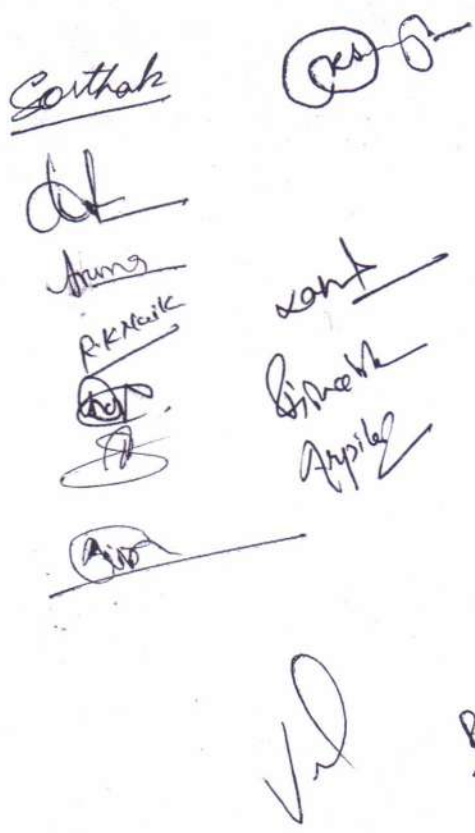
Three "Value Added Courses (VACs)" have been introduced to provide additional skills to the students in order to make them employable. The list of VACs is attached herewith.


Meeting ended with Vote of Thanks to Chairs

Above meeting was attended by following members:

1. Dr. P. K. Singhal
2. Dr. Bhavna Jharia
(Joint Controller, PEB, Bhopal)
3. Dr. Rekha Gupta
4. Dr. Vanadana Vikas Thakre
5. Dr. Laxmi Shrivastava
6. Dr. Karuna Markam
7. Prof. Madhav Singh
8. Prof. Pooja Sahoo
9. All NPIU faculty members

- Chairman 
External Member
Member 
Member 
Member 
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Item 1: COs for all core courses from V Semester to VIII Semester to be offered under the Flexible Curriculum.

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Flexible Curriculum
CO's for courses being offered in the academic year 2018-19
Electronics Engineering
SEMESTER – 3

Subject Code & Name	CO No.	CO Details
140301 Electronics - I	CO1	Analyze the characteristics of various engineering materials.
	CO2	Design different diode and transistor circuits.
	CO3	Analyze the response of transistor circuits.
	CO4	Design Analog circuits.
	CO5	Examine the working of transistor based circuits.
	CO6	Examine basic construction of feedback circuits and their application.
140302 Digital Circuits And Systems	CO1	Simplify the Boolean expression using minimization techniques
	CO2	Implement the Boolean expression using basic and universal logic gates.
	CO3	Design different combinational logic circuits
	CO4	Design various latches and flip-flops
	CO5	Design various shift registers and counters using flip-flops
	CO6	Analyze different types of logic families, semiconductor memories, & multivibrators.
140303 Network Theory	CO1	Apply the fundamental concepts of Network Theory in different Electrical networks
	CO2	Design the coupled circuits.
	CO3	Identify appropriate techniques for solving the Electrical networks .
	CO4	Evaluate the steady state response and transient response of circuit.
	CO5	Analyze different networks in time and frequency domain.
	CO6	Examine the performance of an Electrical circuit using two port network.
140304 Signals And Systems	CO1	Explain different basic signals and their mathematical description.
	CO2	Analyze the spectral characteristics of continuous-time and discrete time signals.
	CO3	Evaluate the properties of continuous-time and discrete time signals.
	CO4	Analyze the properties of LTI continuous-time and discrete time systems using transform.
	CO5	Estimate the convolution and response of continuous-time and discrete time systems with respect to input.
	CO6	Design a block diagram of LTI system corresponding to given differential/ difference equation.

SEMESTER – 4

100003 Mathematics-III	CO1	Retrieve the engineering application problems to related course content
	CO2	Describe the basic concept of Complex Variable , Linear Programming Problem and Numerical Methods
	CO3	Classify Complex Variable , Linear Programming Problem and Numerical Methods so as to apply the knowledge in solving routine problems
	CO4	Inculcate analytical and computational skill to interpret the topics for engineering problems
	CO5	Analyze the Complex Variable, Linear Programming Problem and Numerical Methods to examine the real world problem
	CO6	Evaluate and Implement suitable techniques relevant for industries and contribute to the society
140401 Electronics-II	CO1	Analyze the characteristics of amplifier.
	CO2	Design the tuned amplifier with the given parameters.
	CO3	Distinguish between various amplifiers.
	CO4	Design the multistage amplifiers.
	CO5	Design the various electronics circuits using Operational amp.
	CO6	Implement the active filters based on polynomials.
140402 Analog Communication	CO1	Explain the Amplitude modulation in communication engineering.
	CO2	Analyze the Angle modulation with their waveforms.
	CO3	Identify various transmitters and receivers .
	CO4	Estimate probability density/ distribution function for various random variables.
	CO5	Evaluate the effects of noise on different modulation techniques
	CO6	Compare different Modulation Techniques
140403 Communication Networks	CO1	Compute the various parameters of different networks.
	CO2	Design the symmetrical and asymmetrical attenuators.
	CO3	Synthesize the network for a given positive and minimum positive real function.
	CO4	Design passive filters for the given specifications.
	CO5	Analyze the characteristics of various transmission lines.
	CO6	Calculate the impedance and SWR using Smith Chart.
140404 Electronics Measurement and Instrumentation	CO1	Explain the working principle and applications of various bridges in measurement.
	CO2	Differentiate between various transducers.
	CO3	Design various signal generators.
	CO4	Analyze the working principle of various digital instruments.
	CO5	Measure various parameters using different CROs.
	CO6	Design of A/D and D/A converter.

SEMESTER – 5

140501 Electromagnetic Fields	CO1	Solve the problems associated with static electricromagnetic fields in different engineering situation.
	CO2	Describe static and dynamic electric and magnetic field
	CO3	Apply boundary conditions for electric and magnetic fields at the interface of two different media.
	CO4	Solve diverse engineering problems with the help of Maxwell Equations
	CO5	Analyze the behavior of plane waves in different media
	CO6	Examine the phenomenon of wave propagation and reflection in different media.
140502 Digital Signal Processing	CO1	Differentiate between continuous and discrete time signal and system.
	CO2	Analyze discrete time systems using z-transform.
	CO3	Design digital filters
	CO4	Implement discrete Fourier transform using FFT.
	CO5	Design Linear Phase FIR filter
	CO6	Design IIR Filter to meet specified magnitude /phase response characteristics
140503 Linear Control Theory	CO1	Apply the fundamentals of feedback control systems.
	CO2	Evaluate the performance of closed-loop control systems using different control actions.
	CO3	Use models of physical systems in forms suitable for use in the analysis and design of control systems.
	CO4	Determine the time and frequency-domain responses of control systems for various inputs.
	CO5	Analyze the stability of a closed loop control systems
	CO6	Evaluate the response of a Linear Time Invariant control systems using state space techniques.
140504 Digital Communication	CO1	Inspect various aspects of sampling and pulse modulation methods
	CO2	Analyze various analog to digital signal conversion techniques and digital baseband transmission.
	CO3	Examine different digital modulation techniques with spectral analysis
	CO4	Evaluate the performance of various bandpass digital modulation techniques.
	CO5	Solve problems of information theory and source coding
	CO6	Apply error correcting codes in digital communication

SEMESTER-6

140601 Microprocessor and Interfacing	CO1	Explain the architecture and organization of different microprocessors and microcontroller .
	CO2	Analyze the operation of different microprocessors and microcontroller .
	CO3	Write assembly language program for microprocessors and microcontroller .
	CO4	Interface memory and I/O devices with different microprocessors.
	CO5	Analyze the interrupt/data handling processes of 8085 and 8086 microprocessor.
	CO6	Distinguish between different types of general purpose programmable peripheral devices i.e. 8254, 8259, 8257, 8251 USARTetc.

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Item 2: List of Semester Wise Departmental Electives to be offered, under the Flexible Curriculum.

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List of Departmental Electives
Electronics Engineering

S. No	Category/ Electives	Track	Subject Code	Suggested Subject Name
1	Department Electives-1	Communication Engg.	140602A	Data Communication
		Microwave Engg./ NPTEL	140602B	Antenna Theory
		VLSI	140602C	Solid State Devices
		Instrumentation & Control	140602D	Biomedical Instrumentation
2	Department Electives-2	Communication Engg.	140603A	Information Theory & Coding
		Microwave Engg.	140603B	Microwave Engg.
		VLSI	140603C	VLSI Design
		Instrumentation & Control	140603D	Advanced control system
3	Department Electives-3	Communication Engg.	140604A	Wireless Communication
		Microwave Engg.	140604B	Microwave Communication
		VLSI	140604C	Digital IC Design
		Instrumentation & Control / NPTEL	140604D	Sensors and Actuators
4	Department Electives-4	Communication Engg.	140701A	Fiber Optics and Optical Communication
		Microwave Engg. / NPTEL	140701B	Microwave Integrated Circuits
		VLSI	140701C	Digital VLSI Design
		Instrumentation & Control	140701D	Industrial Electronics
5	Department Electives-5	Communication Engg.	140702A	Broadband Communication
		Microwave Engg. /NPTEL	140702B	Analysis and Design Principles of Microwave Antennas
		VLSI	140702C	Integrated Circuits, MOSFETS, OP-Amps and their Applications
		Instrumentation & Control	140702D	Intelligent Instrumentation
6	Department Electives-6	Communication Engg.	140801A	Computer Networks
		Microwave Engg. / NPTEL	140801B	Software defined Radios
		VLSI	140801C	RF and Mixed Signal Circuits
		Instrumentation & Control	140801D	Virtual instrumentation

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Item 3: List of Open Elective Courses (Lab/theory courses for all branches) to be offered which have inter-departmental interest and relevance.

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List of Open Electives
Electronics Engineering

S. No.	Category/ Electives	Subject Code	Suggested Subject Name	Prerequisite
1.	Open Course-1	140605A	Soft Computing Techniques	<ul style="list-style-type: none"> • Basic knowledge of differential calculus. • Probability theory. • Basic concept of Artificial Intelligence
		140605B	Microcontroller & Embedded System	<ul style="list-style-type: none"> • Digital circuits. • High level language programming • Flow chart for problems
2.	Open Course-2	140703A	Artificial Intelligence	<ul style="list-style-type: none"> • Linear algebra (vectors, matrices, derivatives) • Calculus. • Basic probability theory
		140703B	Simulation and Modelling	<ul style="list-style-type: none"> • Combinatorics • Numerical Methods • Linear Algebra • Probability and Statistics • Discrete structures, graph theory • Object-oriented design and programming
3.	Open Course-3	140704A	Mechatronics	<ul style="list-style-type: none"> • Engineering mechanics. • Mechanics of materials • Electronic circuits - analysis and design • Mathematics - Calculus, differential equations, numerical methods
		140704B	Computational Electromagnetics	<ul style="list-style-type: none"> • Vector Calculus, Partial Differential Equations, Linear Algebra, • Basic Electromagnetics
4.	Open Course-4	140802A	Nano Electronics	<ul style="list-style-type: none"> • Semiconductor Devices • Microelectronics – VLSI • Quantum Physics • Solid State Physics
		140802B	Process Control & Instrumentation	<ul style="list-style-type: none"> • Electrical Networks • Control Systems • Instrumentation and Measurement
5.	Open Course-5	140803A	Satellite Communication	<ul style="list-style-type: none"> • Knowledge on Digital Communication • Communication Engineering
		140803B	Adaptive Control System	<ul style="list-style-type: none"> • Nonlinear Systems • Nonlinear Control • Controller Designing

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**Item 4: Question papers for Academic Year
2017-18 on the basis of COs and other
parameters.**

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Question Paper analysis: Academic Year 2017-2018

Sr. no.	Course Code	Course Name	% of Theoretical & Numerical Questions	Easy (%)	Moderate (%)	Difficult (%)	% of LOT	% of HOT
1	BELL 301	Material Science	100 & 0	80	20	0	90	10
2	BELL 302	Electronics-I	92 & 8	60	20	20	70	30
3	BELL 303	Digital Circuits and System	50 & 50	30	50	20	55	45
4	BELL 304	Network Theory	40 & 60	40	40	20	60	40
5	BELL 305	Electronics Measurement & Instrumentation	80 & 20	60	30	10	75	25
6	BELL 402	Electronics-II	76.19 & 23.8	73.33	26.67	0	86.6	13.3
7	BELL 403	Analog Communication	86.67 & 13.33	40	60	0	70	30
8	BELL 404	Network Synthesis and Filter Design	40 & 60	35.24	31.42	33.34	51	49
9	BELL 405	Signals & Systems	60 & 40	30.5	56.2	13.3	58.6	41.4
10	BELL 502	Microprocessor and Interfacing	80 & 20	35	40	25	55	45
11	BELL 503	Electromagnetic Fields	70 & 30	20	60	20	50	50
12	BELL 504	Linear Control Theory	60 & 40	10	65	25	42.5	57.5
13	BELL 505	Digital Communication	50 & 50	20	50	30	45	55
14	BELL 601	Antenna and Wave Propagation	86.67 & 13.33	46.67	40	13.33	66.6	33.3
15	BELL 602	Digital Signal Processing	27.61 & 72.38	38.1	52.4	9.5	64.3	35.7
16	BELL 603	Data Communication	86.67 & 13.33	47.6	35.2	17.1	65.2	34.7

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Question Paper analysis: Academic Year 2017-2018

17	BELL 604	Electronics System Design	63.8 & 36.19	80	13.33	6.67	86.6	13.4
18	BELL 605	Industrial Electronics	73.33 & 26.67	57.1	29.5	13.4	71.8	28.2
19	ELL 701	Advanced Control System	40 & 60	20	60	20	50	50
20	ELL 702	Microwave Engineering	72 & 28	40	40	20	60	40
21	ELL 703	Cellular Mobile Communication	50 & 50	20	50	30	45	55
22	ELL 704	VLSI Design	70 & 30	25	65	10	57.5	42.5
23	ELL 705	ATM Networks	90 & 10	25	65	10	57.5	42.5
24	ELL 801	Fiber optics & optical communication	20 & 80	25.7	47.6	26.7	49.5	50.5
25	ELL 802	Satellite Communication	67.62 & 32.38	30.5	42.9	26.6	52	48
26	ELL 803	TV and RADAR Engg.	90 & 10	25	65	10	57.5	42.5
27	ELL 804	Neural Network and Fuzzy systems	70 & 30	20	50	30	45	55

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Question Paper CO analysis: Academic Year 2017-2018

Sr. no	Course Code	Course Name	% of CO1	% of CO2	% of CO3	% of CO4	% of CO5	% of CO6
1	BELL 301	Material Science	20	8	12	20	20	20
2	BELL 302	Electronics-I	20	20	20	20	20	0
3	BELL 303	Digital Circuits and System	8	12	32	24	24	0
4	BELL 304	Network Theory	16	8	16	20	20	20
5	BELL 305	Electronics Measurment & Instrumentation	16	4	12	8	20	40
6	BELL 402	Electronics-II	20	20	20	16	4	20
7	BELL 403	Analog Communication	20	20	20	20	12	8
8	BELL 404	Network Synthesis and Filter Design	20	20	20	20	12	8
9	BELL 405	Signals & Systems	12	28	20	20	20	0
10	BELL 502	Microprocessor and Interfacing	21.4	21.4	17.8	10.7	17.8	10.7
11	BELL 503	Electromagnetic Fields	56	0	0	32	8	4
12	BELL 504	Linear Control Theory	20	20	20	20	12	8
13	BELL 505	Digital Communication	16	8	16	20	20	20
14	BELL 601	Antenna and Wave Propagation	8	16	24	12	20	20
15	BELL 602	Digital Signal Processing	21.8	18.7	15.6	15.6	15.6	12.5
16	BELL 603	Data Communication	20	20	20	16	4	20

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Question Paper CO analysis: Academic Year 2017-2018

17	BELL 604	Electronics System Design	20	20	20	20	12	8
18	BELL 605	Industrial Electronics	20	12	8	20	20	20
19	ELL 701	Advanced Control System	28	4	28	4	20	16
20	ELL 702	Microwave Engineering	20	20	20	16	4	20
21	ELL 703	Cellular Mobile Communication	16.6	30	20	13.3	16.6	3.3
22	ELL 704	VLSI Design	20	20	20	16	4	20
23	ELL 705	ATM Networks	20	12	8	20	20	20
24	ELL 801	Fiber optics & optical communication	20	20	20	20	20	0
25	ELL 802	Satellite Communication	27.27	13.6	9.1	22.7	9.1	18.1
26	ELL 803	TV and RADAR Engg.	20	12	8	20	20	20
27	ELL 804	Neural Network and Fuzzy systems	8	16	24	12	20	20

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**Item 5: Review the COs and their attainments for all
courses beginning with the Academic Year (2014-15)
to (2018-19).**

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SEMESTER	Subject Code	Subject Name	CO Attainment			
			2014 % Attainment	2015 % Attainment	2016 % Attainment	2017 % Attainment
semester 1	ELL101T/BELL 101/100201	Engineering Chemistry/Mathematics-I*/Engineering Physics**	45.04	60.02*	80.41*	41.8**
	ELL102T/BELL 102/100202	Engineering Mathematics-I/Physics*/Energy, Ecology, Environment & Society**	48.53	59.58*	77.83*	62.46**
	ELL103T/BELL 103/100203	Communication Skills/ Fundamental of Electronics Engineering*/Basic Computer Engineering**	78.40	66.89*	86.36*	42.3**
	ELL104T/BELL 104/100204	Basic Electrical AND Electronics Engg./Fundamental of Electrical Engineering*/Basic Mechanical Engineering**	64.16	62.25*	76.25*	70.02**
	ELL105T/BELL 105/100205	Engineering Graphics/Basic Civil Engineering & Mechanics**	50.53	66.34	68.14	63.19**
	ELL101/BELL102/100201(P)	Engineering Chemistry/Physics*/Engineering Physics**	85.79	83.17*	85.54*	84.66**
	ELL103/BELL103/100203(P)	Communication Skills/Fundamental of Electronics Engineering*/Basic Computer Engineering**	51.62	75.52*	79.33*	81.12**
	ELL104/BELL104/100204(P)	Basic Electrical AND Electronics Engg./Fundamental of Electrical Engineering*/Basic Mechanical Engineering**	84.83	72.03*	85.47*	74.85**
	ELL105/BELL105/100205(P)	Engineering Graphics/Basic Civil Engineering & Mechanics**	84.10	79.42	88.74	81.36**
	ELP106/BELS106/100206(P)	Workshop Practice/Manufacturing Practices*/Language Lab. & Seminars**	80.93	79.36*	79.97*	78.45**
	BELS107(P)	Introduction to Electronics Engineering		81.60	85.60	
BELS108(P)	Communication		73.60	69.60		

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Department: Electronics Engineering

semester 2	ELL111T/BELL201/100101	Engineering Physics/ Mathematics-II*/Engineering Chemistry**	71.07	57.33*	63.37*	51.83**
	ELL112T/BELL202/100102	Energy, Envi. Ecology and society /Chemistry* / Engineering Mathematics-I**	74.37	65.62*	86.57*	53.86*
	ELL113T/BELL203/100103	Basic Computer Engg./English*/Technical English**	56.18	51.29*	63.03*	54.26**
	ELL114T/BELL204/100104	Basic Mechanical Engg./Engineering Mechanics*/Basic Electrical & Electronics Engineering**	60.19	75.82*	85.44*	60.96**
	ELL115T/BELL205/100105	Basic Civil Engg. And Engg. Mechanics/Concept of Engg. Design*/Engineering Graphics**	70.53	59.54*	79.01*	76.48**
	ELL111/BELL202/100101(P)	Engineering Physics*/Chemistry**	83.55	83.10*	91.87*	89.56**
	ELL113/BELL203/100103(P)	Basic Computer Engg./English*/Technical English**	78.37	69.26*	70.43*	69.58**
	ELL114/BELL204/100104(P)	Basic Mechanical Engg./Engineering Mechanics*/Basic Electrical & Electronics Engineering**	82.46	88.67*	93.60*	91.43**
	ELL115/BELS206/100105(P)	Basic Civil Engg. And Engg. Mechanics/Environmental Sciences*/Engineering Graphics**	87.07	70.94*	86.91*	86.88**
	ELP116/BELS207/100106(P)	Language Lab and Seminar/Manufacturing Practices**	71.62	44.35	88.91	60.96**
	BELS208(P)	Computer programming		87.20	88.80	
semester 3	ELL301T/BELL301	Mathematics-II/Material Science*	60.1	81.18*	66.88*	
	ELL302T/BELL302	Electronics-I	70.62	77.33	54.49	
	ELL303T/BELL303	Measurement and instrumentation/Digital Circuits and System*	68.43	73.28*	65.71*	
	ELL304T/BELL304	Network Theory	55.98	69.09	75.02	
	ELL305T/BELL305	Communication Network/Electronic Measurement and instrumentation*	66.94	76.02*	74.67*	
	ELL302/BELL302(P)	Electronics-I	90.21	85.28	63.68	

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Department: Electronics Engineering

	ELL303/BELL303(P)	Measurement and instrumentation/Digital Circuits and System*	82.91	80.99*	62.86*
	ELL304/BELL304(P)	Network Theory	80.99	76.19	66.32
	ELP306/BELP306(P)	Computer Programming-III/ Computer Lab	73.34	83.04	65.32
	ELS307/BELS307(P)	Self study/Idea Generation*	74.98	90.27*	92.14*
	ELS308/BELS308(P)	Seminar_GD/Communication Skills*	81.44	61.57*	79.85*
semester 4	ELL401T/BELL401	Mathematics-III	69.90	81.22	78.93
	ELL402T/BELL402	Analog Communication/Electronics-II*	70.30	83.66*	58.73*
	ELL403T/BELL403	Digital Computer Organization/Analog Comm.*	68.61	68.66*	62.07*
	ELL404T/BELL404	Digital Electronics/Network Synthesis*	76.05	73.63*	60.57*
	ELL405T/BELL405	Electronics-II/Signals & Systems*	77.44	79.58*	72.00*
	ELL402/BELL402(P)	Analog Communication/Electronics-II*	86.24	90.46*	56.54*
	ELL404/BELL403(P)	Digital Electronics/Analog Comm.*	81.44	82.56*	61.4*
	ELL405/BELL404(P)	Electronics-II/Network Synthesis*	68.38	85.22*	62.88*
	ELP406/BELP406(P)	Computer Programming-IV/Simulation Lab*	67.81	79.46*	66.97*
	ELS407/BELS407(P)	Self study/Seminar Presentation*	89.12	83.488*	88.64*
	ELS408/BELS408(P)	Semina-GD/Integrated ethics & Attitude*	91.55	69.76*	79.81*
	semester 5	ELL501/BELL501	Principle of Management and Manegeerial Economics	67.95	62.00
ELL502/BELL502		Microprocessor and Interfacing	54.26	56.00	
ELL503/BELL503		Electromagnetic field	76.94	55.00	
ELL504/BELL504		Linear Control Theory	74.54	69.00	
ELL505/BELL505		Digital Communication	52.80	55.00	
ELL502/BELL502 (P)		Microprocessor and Interfacing	81.50	61.40	
ELL504/BELL504(P)		Linear Control Theory	87.01	56.60	
ELL505/BELL505(P)		Digital Communication	87.84	69.88	
ELP506/BELP506(P)		Electronics Workshop	55.94	62.00	
ELS507/BELS507(P)		Self study	93.86	92.66	
ELS508/BELS508(P)		Seminar/ GD	88.67	95.81	

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Madhav Institute of Technology & Science, Gwalior-5
Department: Electronics Engineering

semester 6	ELL601/BELL601	Antenna and Wave propagation	63.68	60.00
	ELL602/BELL602	Digital Signal Processing	74.78	60.00
	ELL603/BELL603	Data Communication	61.34	60.00
	ELL604/BELL604	Electronic System Design	84.82	66.00
	ELL605/BELL605	Industrial Electronics	83.52	61.00
	ELL602/BELL602(P)	Digital Signal Processing	85.41	56.00
	ELL603/BELL603(P)	Data Communication	86.11	82.54
	ELL605/BELL605(P)	Industrial Electronics	85.41	68.24
	ELP606/BELP606(P)	Minor Project	73.95	93.66
	ELS607/BELS607(P)	Self study	92.38	91.56
	ELS608/BELS608(P)	Seminar /GD	86.43	93.22
Semester 7	ELL701	Advanced Control System	59.77	
	ELL702	Microwave Engineering	64.67	
	ELL703	Cellular Mobile Communication	58.40	
	ELL704	VLSI Design	60.03	
	ELL705	ATM Networks	63.82	
	ELL701(P)	Advanced Control System	59.48	
	ELL702(P)	Microwave Engineering	62.36	
	ELP706(P)	Major Project-I	72.56	
	ELS707(P)	Self Study	68.26	
	ELS708(P)	Seminar-GD	76.44	
Semester 8	ELL801	Fiber optics & optical communication	71.03	
	ELL802	Satellite Communication	70.47	
	ELL803	TV and RADAR Engg.	62.90	
	ELL804	Neural Network and Fuzzy systems	78.10	
	ELL801 (P)	Fiber Optics and Optical Communication (Lab)	54.68	
	ELL802 (P)	Satellite Communication (LAB)	62.4	
	ELL803 (P)	TV And RADAR Engg. (Lab)	59.8	
	ELP805(P)	Major Project-I	76.42	
	ELS806(P)	Self Study	68.91	
	ELS807(P)	Seminar-GD	78.38	

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Department of Electronics Engineering

Item 6: Gaps in CO attainment levels for Academic Year 2017-18 and propose corrective measures for improvement.

Item 7: Attainment targets for all COs for courses being offered in the Academic Year 2018-19.

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Madhav Institute of Technology & Science Gwalior-5

Department :		ELECTRONICS ENGG.							
Year		2017-2018							
		Course Outcome		Total % Attainment	Target attainment level	Gap	Action Taken	Next target attainment level (%)	
semester I	100201 Engineering Physics	CO1	Develop a conceptual approach towards classifying the multifarious contents of Modern Engineering Physics at ground level.	64.4	60	4.40%	No	70	
		CO2	Comprehend their analytical skills to interpret the topics related to Quantum Physics, Nuclear Sciences , Optics, Solid State Physics and Laser Systems	73.8	60	13.80%	No	75	
		CO3	Evaluate and Apply the various topics in the course content and distinguish between them in terms of their specialized applications.	41	60	-19%	Additional Classes taken, More tutorial	60	
		CO4	Enhance their logical and computational skills to counter real time problem solving techniques	41	60	-19%	More tutorial, solutions of previous year question papers	60	
		CO5	Apply the concepts of the studied topics to the various industries of relevance and contribute to the society.	41	60	-19%	More interaction with industry Resource person	60	
		CO6	Correlate and characterize the subjective contents with the real time engineering applications	40	60	-20%	Provide practical project based learning	60	
			100201 Engineering Physics						
	100202 Energy, Ecology, Environment & Society	CO1	Describe various energy resources, their conversion to electrical power and role in technological & economic development	60	60	0%	No	70	
		CO2	Update with national/international power status and renewable power development targets & missions	61	60	1%	No	70	
		CO3	Recognize the impact of pollution on the ecosystem and control policies adopted at national/international levels	64	60	4%	No	70	
		CO4	Illustrate the concepts of ecosystems and their conservation	60	60	0%	No	70	
		CO5	Solve practical problems of society in a sustainable and ethical manner	65	60	5%	No	70	
		CO6	Fulfill professional duties keeping in mind the environmental safety, health, and welfare of public	65	60	5%	No	70	
		100202 Energy, Ecology, Environment & Society							

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100203 Basic Computer Engineering	CO1	Illustrate the basic fundamental, generation, evolution of computer	56	60	-4%	Additional Classes taken, More tutorial	60
	CO2	Explain hardware's and software's component of computer and perform conversion between numbers systems	59	60	-1%	Solutions of previous year question papers. Additional Classes taken	60
	CO3	Develop the ability to write computer programs to solve real word problems	55	60	-5%	More interaction with other department students.	60
	CO4	Analyze the various functions of operating system.	28	60	-32%	Provide pactical project based learning	60
	CO5	Explain various terminologies of DBMS.	21	60	-39%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO6	Build the concept of internet based and e-commerce	33	60	-27%	Provide pactical project based learning	60
100203 Basic Computer Engineering							
100204 Basic Mechanical Engineering	CO1	State the working of IC and steam engines and thermodynamic cycles.	75	60	15%	No	80
	CO2	Discuss the fluid properties, pumps, compressors, turbines, various types of boilers, the mountings and accessories and able to calculate the boiler efficiency and to design the chimney dimensions.	75	60	15%	No	80
	CO3	Operate the machine tools like lathe, shaper and drilling machine	62	60	2%	No	70
	CO4	Conduct experiments, as well as to analyze and interpret data.	67	60	7%	No	70
	CO5	Design and realize a physical system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	76	60	16%	No	80
	CO6	Implement modifications in the area of mechanical systems and thermal systems.	65	60	5%	No	70
100204 Basic Mechanical Engineering							

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	100205 - Basic Civil Engineering and Mechanics	CO1	Identify suitable building materials according to IS code and its engineering application.	63	60	3%	No	70
		CO2	Measure the linear distance and directions by conventional and EDM methods for traverse	62	60	2%	No	70
		CO3	Measure area and volume of field using theodolite and plane table for graphical representation.	68	60	8%	No	70
		CO4	Analyse plane truss by method of joints and sections and analysis of concurrent and non concurrent co-planar forces	64	60	4%	No	70
		CO5	Determine location of centre of gravity and moment of inertia for different shapes	63	60	3%	No	70
		CO6	Draw SF and BM diagram for simply supported and cantilever beams subjected to various loadings	59	60	-1%	Additional Classes taken, More tutorial	60
			100205 - Basic Civil Engineering and Mechanics					
	100205 (P)- Basic Civil Engineering and Mechanics Lab	CO1	Measure the linear distance by chain, tape & dumpy level.	62	60	2%	No	70
		CO2	Determine R. L. of known points of different terrain by dumpy level.	63	60	3%	No	70
		CO3	Measure horizontal & vertical angle by theodolite.	63	60	3%	No	70
		CO4	Determine area of known terrain & estimate earthwork.	62	60	2%	No	70
		CO5	Determine Shear Force and Bending Moment by graphical method.	59	60	-1%	More tutorial, solutions of previous year question papers	60
		100205 (P)- Basic Civil Engineering and Mechanics Lab						
semester 2	100101 Engineering Chemistry	CO1	Acquire the knowledge and importance of water treatment for domestic and Industrial purpose	51	60	-9%	Provide practical project based learning	60
		CO2	Acquire the knowledge of types, properties and application of lubricants, fuels advanced polymer materials, cement, refractories, dye and advance Engineering material	53	60	-7%	Additional Classes taken, solutions of previous year question papers	60
		CO3	Develop an ability to apply knowledge in solving numerical problems.	51	60	-9%	More tutorial, solutions of previous year question papers	60

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	CO4	Use the concept of chromatography and spectroscopy for varied engineering applications related to day to day life.	51	60	-9%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO5	Correlate and characterize the subjective knowledge with the real time problems.	52	60	-8%	Provide practical project based learning	60
	CO6	Correlate and characterize the subjective knowledge with the real time problems.	53	60	-7%	More Seminar and lecture	60
	100101 Engineering Chemistry						
100102 Engineering Mathematics I	CO1	Understand the basic concept of differential calculus, integral calculus, ordinary differential equation, matrix and Boolean algebra	62	60	2%	No	70
	CO2	Describe the basics of Differential Calculus, Integral Calculus, Differential Equation, Matrix theory, Boolean Algebra	46	60	-14%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO3	Apply the concepts of the studied topics to solve the routine problems.	71	60	11%	No	70
	CO4	Analyze and illustrate the techniques imparted through course content to solve engineering problems.	37	60	-23%	Provide practical project based learning	60
	CO5	Evaluate the application of studied topics and applying suitable mathematical techniques to solve them.	45	60	-15%	More tutorial, solutions of previous year question papers	60
	CO6	Devise newer ideas and logical skills to solve real world problems	63	60	3%	No	70
	100102 Engineering Mathematics I						
100103 Technical English	CO1	Speak clearly effectively and appropriately in a public forum to a variety of audiences and purposes	59	60	-1%	More Seminar and lecture	60
	CO2	Prepare and deliver oral presentations and arguments acceptable within the Engineering Profession effectively.	51	60	-9%	Provide practical project based learning	60

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	CO3	Demonstrate knowledge and comprehension of major text and traditions in language as well as its social, cultural, and historical context.	52	60	-8%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO4	Read a variety of Text critically and analytically so as to demonstrate in writing and/or speech the interpretation of those texts.	60	60	0%	No	70
	CO5	Evaluate and interpret text written in English assessing the results in written and oral arguments using appropriate material for support.	52	60	-8%	Additional Classes By Expert, More interaction among students	60
	CO6	Develop professional work habit including those necessary for effective collaboration and cooperation with others.	52	60	-8%	More Seminar and lecture by industry person	60
	100103 Technical English						
100104: Basic Electrical & Electronics Engineering	CO1	Explain the basic concepts of DC, AC, magnetic circuits, transformer and electronic circuits	60	60	0%	No	70
	CO2	Describe the behavior of any electrical and magnetic circuits.	63	60	3%	No	70
	CO3	Identify the type of electrical machine used for that particular application	62	60	2%	No	70
	CO4	Explain the working principle, construction, applications of transformer	65	60	5%	No	70
	CO5	Classify the logic gates and flip flops for various applications in digital electronic circuits	63	60	3%	No	70
	CO6	Explain of characteristics of Diode and Transistor	53	60	-7%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	100104: Basic Electrical & Electronics Engineering						
100105 Engineering Graphics	CO1	Imagine and visualize the geometric details of engineering objects	79	60	19%	No	80
	CO2	Translate the geometric information of engineering objects into engineering drawings.	79	60	19%	No	80
	CO3	Use computer aided drafting in their respective engineering field.	68	60	8%	No	70
	CO4	Develop knowledge to read, understand and explanation of drawing.	80	60	20%	No	85
	CO5	Improve their skills so that they can apply these skills in developing new products.	79	60	19%	No	80

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100106 Manufacturing Practices	CO6	Prepare simple layout of factory, machine and buildings.	73	60	13%	No	75	
	100105 Engineering Graphics							
	CO1	Discuss the hand tools, machine tools and power tools.	60	60	0%	No	70	
	CO2	Identify appropriate tools required for specific operation.	63	60	3%	No	70	
	CO3	Estimate safety measures required to be taken while using the tools in floor shops, Machine shops and carpentry shop.	62	60	2%	No	70	
	CO4	Use the techniques, skills, and modern engineering tools necessary for manufacturing and production engineering.	65	60	5%	No	70	
	CO5	Conduct experiments in the field of Production engineering.	63	60	3%	No	70	
CO6	Design a system, components, or process to meet desired needs, ethical, health and safety, manufacturability and sustainability.	53	60	-7%	Provide practical project based learning	60		
		100106 Manufacturing Practices						
semester 3	BELL-301: Material Science	CO1	Describe historical perspective, importance of material science, various atomic model with periodic table and classify types of chemical bonding	86	60	16%	No	90
		CO2	Classify the various crystal types with types of cubic crystals, crystallographic techniques and imperfections	86	60	16%	No	90
		CO3	Estimate miller indices and atomic packing fraction	49	60	-11%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
		CO4	Explain various dielectric and magnetic material their properties and classifications	67	60	7%	No	70
		CO5	Summarize optical properties of engineering material and applications of integrated optical devices	74	60	14%	No	75
		CO6	Elaborate various concepts related to super conductor and semiconductors and their properties and classifications	39	60	-21%	More interaction with other department students.	60
			BELL-301: Material Science					
BELL-302	CO1	Design clipper, clamper and dc voltage regulator.	56	60	-4%	Additional Classes taken, More tutorial	60	

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	CO2	Analyze characteristics of various transistor configuration circuits.	48	60	-12%	More tutorial, solutions of previous year question papers	60
	CO3	Analyze different biasing techniques in transistor.	52	60	-8%	More interaction with other department students.	60
	CO4	Examine the working principle of FET & MOSFET.	52	60	-8%	Provide practical project based learning	60
	CO5	Determine the frequency response of an amplifier and RC Coupled amplifier.	69	60	9%	No	70
	CO6	Apply FET as VVR.	50	60	-10%	More Seminar and lecture	60
	BELL-302: Electronics I						
BELL-302:	CO1	Implement the basic rectifier, clipper and clamper circuits.	61	60	1%	No	70
	CO2	Verify V-I characteristics of Zener diode, BJT in different configuration.	65	60	5%	No	70
	CO3	Troubleshoot the already fabricated circuit individually or in a team.	65	60	5%	No	70
	CO4	Study characteristics of MOSFET.	63	60	3%	No	70
	CO5	Develop the ability of working in team/group and learn professional ethics.	62	60	2%	No	70
	CO6	Handle the basic instruments such as Multimeter, function generator and CRO properly.	66	60	6%	No	70
	BELL-302: Electronics I (LAB)						
BELL-303: Digital Circuits and	CO1	Identify different logic gates, their realizations and truth tables.	76	60	16%	No	80
	CO2	Prove properties of Boolean algebra.	54	60	-6%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO3	Design various synchronous and asynchronous sequential circuits.	80	60	20%	No	85
	CO4	Discriminate between combinational and sequential circuits.	70	60	10%	No	75
	CO5	Describe the operation of different types of semiconductor memories.	69	60	9%	No	70
	CO6	Compare the Logic families and converters.	46	60	-14%	More Seminar and lecture	60
	BELL-303: Digital Circuits and System						

BELL-303: Digital Circuits and System	CO1	Verify the operation of basic logic gates and DE Morgan's theorem using standard combinational logic.	61	60	1%	No	70
	CO2	Construct the basic gates by using universal gates.	64	60	4%	No	70
	CO3	Develop half adder and full adder circuits using their truth table.	62	60	2%	No	70
	CO4	Develop the D, RS and JK flip-flops and verify their operation.	59	60	-1%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO5	Develop the ability of working in team/group and learn professional ethics.	69	60	9%	No	70
	CO6	Handle the basic instruments such as Multimeter, function generator and CRO properly.	63	60	3%	No	70
BELL-303: Digital Circuits and System (LAB)							
BELL-304:	CO1	Evaluate the circuit parameters using KCL and KVL.	92	60	32%	No	95
	CO2	Analyze the basic application of graph theory in circuit theory	77	60	17%	No	80
	CO3	Analyze the complex electrical networks	84	60	24%	No	85
	CO4	Evaluate the response of first and second order circuit.	66	60	6%	No	70
	CO5	Analyze the networks through transformation (Laplace transform).	46	60	-14%	More tutorial, More lectures	60
	CO6	Evaluate the parameters of two port networks	85	60	25%	No	90
BELL-304: Network Theory							
BELL-304:	CO1	Evaluate the performance of different network theorems.	68	60	8%	No	70
	CO2	Develop the equivalent circuit for different network theorems	66	60	6%	No	70
	CO3	Perform maximum power transfer to a load for series and parallel resonant circuit.	70	60	10%	No	75
	CO4	Illustrate the two port network parameters.	66	60	6%	No	70
	CO5	Demonstrate steady state response and transient response.	62	60	2%	No	70
BELL-304: Network Theory (LAB)							
BELL305:	CO1	Classify different types of bridges.	82	60	22%	No	85
	CO2	Calculate mutual inductance for different types of bridges.	89	60	29%	No	90
	CO3	Analyze the operation of transducers.	57	60	-3%	Additional Classes By Expert, More interaction among students	60

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semester 4		CO4	Differentiate different transducer.	64	60	4%	No	65	
		CO5	Explain various signal generators.	82	60	22%	No	85	
		CO6	Analyze the operation of CRO, digital multi-meters.	74	60	14%	No	75	
	BELL-306	BELL305: Electronics Measurement and Instrumentation							
		CO1	Explain Computer Programming concepts.	67	60	7%	No	70	
		CO2	Write programs with Interactive Input and Output.	65	60	5%	No	70	
		CO3	Explain the concept of fundamentals of Computer, high level language, compiler and assembler and operating systems.	67	60	7%	No	70	
		CO4	Classify various identifiers and keywords, data type & sizes, variable names, declaration, statements.	61	60	1%	No	70	
		CO5	Design programs utilizing decision making.	67	60	7%	No	70	
		BELL-306 Computer LAB							
	BELL 401: Engineering	CO1	Retrieve the engineering application problems to related course content	80	60	20%	No	85	
		CO2	Describe the basic concept of Complex Variable , Linear Programming Problem and Numerical Methods	74	60	14%	No	75	
		CO3	Classify Complex Variable , Linear Programming Problem and Numerical Methods so as to apply the knowledge in solving routine problems	82	60	22%	No	85	
		CO4	Inculcate analytical and computational skill to interpret the topics for engineering problems	79	60	19%	No	80	
		CO5	Analyze the Complex Variable, Linear Programming Problem and Numerical Methods to examine the real world problem	75	60	15%	No	80	
CO6		Evaluate and Implement suitable techniques relevant for industries and contribute to the society	84	60	24%	No	85		
	BELL 401: Engineering Mathematics-III								
BELL402: Electronics-II	CO1	Analyze various types of oscillators & Its application.	72	60	12%	NO	75		
	CO2	Analyze behavior of tuned amplifier and its types.	49	60	-11%	Additional Classes taken, More tutorial	60		
	CO3	Analyze different types of power amplifier, its working principle with application.	50	60	-10%	More tutorial, solutions of previous year question papers	60		
	CO4	Design various Multivibrators using BJT.	68	60	8%	NO	70		
	CO5	Design Multivibrators using 555 timers.	56	60	-4%	Provide pactical project based learning	60		

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	CO6	Analyze the application of Operation Amplifier as adder, subtractor, logarithm, and exponential etc.	57	60	-3%	Additional Classes By Expert, More interaction among students	60
	BELL402: Electronics-II						
BELL403: Analog Communication	CO1	Calculate the Fourier series for periodic non-sinusoidal signals.	51	60	-9%	More tutorial, solutions of previous year question papers	60
	CO2	Analyse the periodic and aperiodic non-sinusoidal signals using Fourier Transform.	65	60	5%	NO	70
	CO3	Explain the need of modulation.	78	60	18%	NO	80
	CO4	Describe amplitude, frequency and phase modulation.	67	60	7%	NO	70
	CO5	Classify the noise and its effect on different modulation techniques.	55	60	-5%	Additional Classes By Expert, More interaction among students	60
	CO6	Describe the random variables and various distribution functions.	56	60	-4%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	BELL403: Analog Communication						
BELL403: Analog	CO1	Differentiate between different modulation and demodulation techniques.	58	60	-2%	More Seminar and lecture	60
	CO2	Analyse the Balance modulator.	58	60	-2%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO3	Construct different modulation demodulation techniques.	61	60	1%	NO	65
	CO4	Calculate the modulation index for given modulation & modulated wave.	65	60	5%	NO	70
	CO5	Differentiate between various kinds of multiplexing.	65	60	5%	NO	70
BELL403: Analog Communication (LAB)							

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BELL404 : Network Synthesis and Filter	CO1	Compute the image impedance and propagation constant of different topologies.	57	60	-3%	More tutorial, solutions of previous year question papers	60
	CO2	Synthesize the network using impedance and admittance function.	56	60	-4%	Provide practical project based learning	60
	CO3	Distinguish the PR & Minimum PR function and also synthesize the systems (using Brunes & Bott Duffin method).	59	60	-1%	Additional Classes taken by experts	60
	CO4	Construct the passive filters using characteristics impedance and cutoff frequency.	61	60	1%	NO	65
	CO5	Understand filter specifications	68	60	8%	NO	70
	CO6	Determine the poles and zeros of networks for stabilization using Butterworth and Chebyshev approximation.	61	60	1%	NO	65
BELL404 : Network Synthesis and Filter Design							
BELL404 : Network Synthesis	CO1	Classify different order of filters. (first order, second order)	62	60	2%	NO	65
	CO2	Construct Different Filters. (Low pass, band pass, high pass, active, passive)	60	60	0%	NO	65
	CO3	Illustrate the two port network parameters.	58	60	-2%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO4	Design filter using Butterworth, and Chebyshev approximation.	63	60	3%	NO	65
	CO5	Investigate minimum positive real function.	71	60	11%	NO	75
BELL404 : Network Synthesis and Filter Design (LAB)							
BELL-405	CO1	Represent the continuous and discrete signals in time and frequency domain.	75	60	15%	NO	80
	CO2	Discriminate the continuous and discrete signals.	79	60	19%	NO	80
	CO3	Analyze mathematical description of Continuous & Discrete time signals.	82	60	22%	NO	85

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	CO4	Describe the LTI system and its properties.	57	60	-3%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO5	Analyze the properties of Continuous and Discrete time systems.	80	60	20%	NO	85
	CO6	Examine the time domain analysis of Continuous & Discrete time systems.	59	60	-1%	Provide practical project based learning	60
	BELL-405 Signals & Systems						
BELL406:	CO1	Explain UNIX Programming concepts.	64	60	4%	NO	65
	CO2	Write a code with Interactive Input and Output.	63	60	3%	NO	65
	CO3	Draw the Flow chart for the given problem.	65	60	5%	NO	70
	CO4	Write programs utilizing decision making.	68	60	8%	NO	70
	CO5	Develop a code using Software Engineering principles	74	60	14%	NO	75
	BELL406: Simulation Lab-II						
BELL402: Electronics-II (LAB)	CO1	Design various oscillator circuits.	58	60	-2%	Provide practical project based learning	60
	CO2	Design circuit using transistors.	63	60	3%	NO	65
	CO3	Examine the characteristics of op-amp at different parameters.	52	60	-8%	Additional Classes taken, solutions of previous year question papers	60
	CO4	Develop the ability of working in a team/group and learn professional ethics.	60	60	0%	NO	65
	CO5	Analyze applications of IC-555 timer.	56	60	-4%	More tutorial, solutions of previous year question papers	60
	CO6	Handle the basic instrument such as multimeter, function generator, and CRO properly.	50	60	-10%	More lab session and interaction with experts	60
	BELL402: Electronics-II (LAB)						

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semester 5	BELL-501:PMME	CO1	Impart knowledge and awareness regarding internal and external environment of management	42	60	-18%	More interaction with other department students.	60
		CO2	Develop spoken ability in a student so that he may acquire the ability to organise and express his ideas	45	60	-15%	Additional Classes taken and More interaction with other department students.	60
		CO3	Predict the situation and to be good decision maker through the case studies and role plays based on actual situation	47	60	-13%	Provide project based learning	60
		CO4	Develop a sound knowledge about economy and economics and to be able to understand how money and finance is to be handled	49	60	-11%	More Seminars and lectures by expert	60
		CO5	Work out needs so as to develop a working knowledge about starting and managing an enterprise	44	60	-16%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
		CO6	Find out ways of solving / overcoming hurdles that crop up while establishing / managing his own enterprise	47	60	-13%	More interaction with industry Resource person	60
		BELL-501:PMME						
	BELL502: Microprocessor	CO1	Explain the architecture and organization of microprocessor 8086, advance microprocessors and microcontroller 8051	41	60	-19%	Additional Classes taken, More tutorial	60
		CO2	Develop skill in assembly language programming for 8086 and 8051.	81	60	21%	NO	85
		CO3	Interface memory and I/O devices using different logic devices and interfacing chips/PPI,s	66	60	6%	NO	70
		CO4	Analyze basic idea about interrupt processing, the data transfer schemes and its applications.	64	60	4%	NO	65
		CO5	Distinguish between different types of general purpose programmable peripheral devices viz 8254, PIT,8259 ,PIC,8257 DMA and 8251USART	46	60	-14%	More Seminars and lectures by expert	60

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	CO6	Design some specific embedded systems using microcontrollers.	37	60	-23%	Provide practical project based learning	60
	BELL502: Microprocessor and Interfacing						
BELL502:	CO1	Perform operations like addition/subtraction/ multiplication/division using 8085,8086 and 8051.	61	60	1%	NO	65
	CO2	Develop various BCD and string programs for 8085,8086,8051.	69	60	9%	NO	70
	CO3	Demonstrate various display pattern using 8085,8086 and 8051.	60	60	0%	NO	65
	CO4	Construct interface operations for various external chips using 8051.	61	60	1%	NO	65
	CO5	Develop the ability of working in team/group and learn professional ethics..	56	60	-4%	More interaction with other department students.	60
	BELL502: Microprocessor and Interfacing (LAB)						
BELL503: Electromagnetic Fields	CO1	Describe static and dynamic electric and magnetic fields for technologically important structures.	75	60	15%	NO	80
	CO2	Apply vector calculus to static electric-magnetic fields in different engineering situations.	48	60	-12%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO3	Use boundary conditions for electric and magnetic fields at the interface of two different media.	52	60	-8%	More tutorial, solutions of previous year question papers	60
	CO4	Analyze Maxwell equations in different forms (differential and integral) and apply them to diverse engineering problems.	51	60	-9%	Solutions of previous year question papers. Additional Classes taken	60
	CO5	Evaluate Poynting vector and apply Poynting vector theorem in problems.	56	60	-4%	More Seminars and lectures by expert	60
	CO6	Examine the phenomena of wave propagation in different media and describe the phenomena of reflection of such waves in plane boundaries between homogeneous media.	51	60	-9%	Provide practical project based learning	60
	BELL503: Electromagnetic Fields						

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BELL504: Linear Control Theory	CO1	Calculate the transfer function of feedback control system using Block diagram and Signal flow graph method..	65	60	5%	NO	70
	CO2	Evaluate the time domain response of first & Second order system for different standard inputs.	68	60	8%	NO	70
	CO3	Distinguish various controllers.	76	60	16%		
	CO4	Calculate steady state error for type 0,1,& 2 system.	51	60	-9%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO5	Determine the (absolute) stability of a closed-loop control system using various methods.	74	60	14%	NO	75
	CO6	Solve the control system equations in state variable form.	80	60	20%	NO	85
BELL504: Linear Control Theory							
BELL504: Linear Control Theory	CO1	Explain the various type of linear control system and their applications.	64	60	4%	NO	65
	CO2	Experimentally characterize the behavior of the elementary feedback control system.	48	60	-12%	Provide practical project based learning	60
	CO3	Explain different types of temperature sensing devices.	51	60	-9%	More lab session and interaction with experts	60
	CO4	Experimentally explain the closed loop temperature control system.	58	60	-2%	More lab session and interaction with experts	60
	CO5	Demonstrate the switching dynamic characteristics of a BJT along with relay.	62	60	2%	NO	65
BELL504: Linear Control Theory (Lab)							
BELL505:	CO1	Describe the various aspects of sampling theorem viz. Aliasing, signal distortion.	70	60	10%	NO	75
	CO2	Design the concepts of Digital Communication System.	62	60	2%	NO	65
	CO3	Apply the digital modulation techniques in communication systems.	57	60	-3%	Additional Classes taken, More tutorial	60

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	CO4	Analyze the performance of digital communication system in terms of error rate and spectral efficiency.	44	60	-16%	More tutorial, solutions of previous year question papers	60
	CO5	Design the concepts of matched filter and correlator detector.	44	60	-16%	Provide practical project based learning	60
	CO6	Solve problems of efficient source coding and channel coding in communications systems.	53	60	-7%	Additional Classes By Expert, More interaction among students	60
	BELL505: Digital Communication						
BELL-505 Digital	CO1	Investigate different digital communication systems.	58	60	-2%	More Seminars and lectures by expert	60
	CO2	Construct different modulation and demodulation systems.	54	60	-6%	Provide practical project based learning	60
	CO3	Demonstrate modern digital communication system.	62	60	2%	NO	65
	CO4	Perform various line coding technique.	64	60	4%	NO	65
	CO5	Evaluate the performance of the digital communication system using MATLAB.	58	60	-2%	More lab session and interaction with experts	60
	BELL-505 Digital Communication (Lab)						
BELL-506 Electronics	CO1	Identify various electronics components and will able to test them.	58	60	-2%	Provide practical project based learning	60
	CO2	Properly operate various measuring instruments (such as multi-meter) and electronics equipments likes CRO, dual-power tracking power supply & function generator.	56	60	-4%	More lab session and interaction with experts	60
	CO3	Design the electronics circuits on bread-board.	57	60	-3%	Additional Classes taken and More lab session	60
	CO4	Do soldering and desoldering of the circuit components properly.	60	60	0%	NO	65

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		CO5	Troubleshoot faulty electronic circuit and able to rectify it.	53	60	-7%	Provide practical project based learning	60
		BELP-506 Electronics Workshop (Lab)						
semester 6	BELL601: Antenna and Wave Propagation	CO1	Analyze the radiation characteristics of dipole antennas of various lengths.	64	60	4%	NO	65
		CO2	Evaluate various parameters of the antenna.	50	60	-10%	Provide practical project based learning	60
		CO3	Design antenna array for the given radiation characteristics.	79	60	19%	NO	80
		CO4	Analyze the effect of earth on antenna radiation properties.	55	60	-5%	More Seminars and lectures by expert	60
		CO5	Analyze the design parameters, radiation mechanism, and applications of various practical antennas.	57	60	-3%	Additional Classes taken and More lab session	60
		CO6	Describe effects of earth and its atmosphere on radio wave propagation.	55	60	-5%	Additional Classes taken, More tutorial	60
		BELL601: Antenna and Wave Propagation						
	BELL602: Digital Signal Processing	CO1	Differentiate between continuous and discrete time signal & systems.	64	60	4%	NO	65
		CO2	Analysis of discrete time systems using z-transform.	64	60	4%	NO	65
		CO3	Design of simple digital filters by placing poles and zeros and their structure implementation.	58	60	-2%	Additional Classes taken	60
		CO4	Computation of discrete Fourier transform and its efficient implementation using fast algorithm.	56	60	-4%	More tutorial, solutions of previous year question papers	60
		CO5	Design of Linear Phase FIR filters.	59	60	-1%	Provide practical project based learning	60
		CO6	IIR filter design to meet specified magnitude/phase response characteristics	61	60	1%	NO	65
BELL602: Digital Signal Processing								
BELL6	CO1	Explain the evolution of computer network and basic concepts of data communication system	56	60	-4%	Additional Classes taken, More seminars	60	

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	CO2	Describe the services of the DATA link layer provided in controlling transmission errors and flow of data	54	60	-6%	Additional Classes By Expert, More interaction among students	60
	CO3	Analyze the various techniques to alleviate the problem of medium allocation in broadcast network like ALOHA, CSMA etc.	60	60	0%	NO	65
	CO4	Explain the principle and protocol for route calculation and be able to perform such calculation in Network layers	60	60	0%	NO	65
	CO5	Explain the services and features of transport layer of data networks	65	60	5%	NO	70
	CO6	Describe the skills of synchronization in data communication	63	60	3%	NO	65
	BELL603: Data Communication						
BELL604: Electronics	CO1	Design regulated power supply.	67	60	7%	NO	70
	CO2	Design single stage and multi stage amplifier using BJT.	70	60	10%	NO	75
	CO3	Design oscillators using BJT.	69	60	9%	NO	70
	CO4	Design of the basic Op-Amp Circuits.	64	60	4%	NO	65
	CO5	Design digital circuits such as flip flop, registers, and counters.	68	60	8%	NO	70
	CO6	Design analog to digital converter and digital to analog converter.	59	60	-1%	Provide practical project based learning	60
	BELL604: Electronics System Design						
BELL605: Industrial Electronics	CO1	Analyze the characteristics of different power semiconductor devices.	70	60	10%	NO	75
	CO2	Design phase controlled rectifier circuits.	66	60	6%	NO	70
	CO3	Design inverter and chopper circuits.	57	60	-3%	More lab session and interaction with experts	60
	CO4	Analyze different cyclo converters & AC voltage controllers with their applications.	61	60	1%	NO	65
	CO5	Express the principle of different types of recordings.	55	60	-5%	More Seminars and lectures by expert	60
	CO6	Characterize the concept of microphones and speakers.	56	60	-4%	More Seminars and lectures by expert	60
	BELL605: Industrial Electronics						
BELL6	CO1	Experimentally explain the characteristic of an SCR.	64	60	4%	NO	65
	CO2	Demonstrate the different triggering techniques of SCR and able to differentiate between AC and DC triggering.	68	60	8%	NO	70

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	CO3	Experimentally verify the R, RC and UJT triggering of SCR.	71	60	11%	NO	75
	CO4	Experimentally verify the ripples in a rectified output.	69	60	9%	NO	70
	CO5	Do experimental demonstration of the half-wave, full-wave and bridge rectifier using SCR.	69	60	9%	NO	70
	BELL605: Industrial Electronics (LAB)						
BELL602: Digital Signal Processing (Lab)	CO 1	Differentiate between continuous and discrete time signal & systems.	58	60	-2%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO 2	Analysis of discrete time systems using z-transform.	56	60	-4%	More tutorial, solutions of previous year question papers	60
	CO 3	Design of simple digital filters by placing poles and zeros and their structure implementation.	57	60	-3%	Provide pactical project based learning	60
	CO 4	Computation of discrete Fourier transform and its efficient implementation using fast algorithm.	60	60	0%	NO	65
	CO 5	Design of Linear Phase FIR filters.	55	60	-5%	Provide pactical project based learning	60
	CO 6	IIR filter design to meet specified magnitude/phase response characteristics	51	60	-9%	More lab session and interaction with experts	60
	BELL602: Digital Signal Processing (Lab)						
BELL603: Data	CO1	Fabricate RS232 interface cable using different connectors.	57	60	-3%	More lab session and interaction with experts	60
	CO2	Establish connection between two system using modems.	60	60	0%	NO	65
	CO3	Establish a network of 4 system using coaxial cable and UTP cable.	55	60	-5%	Provide pactical project based learning	60
	CO4	Construct program using NRZ and Manchester codes.	69	60	9%	NO	70
	CO5	Develop the ability of working in team/group and learn professional ethics.	69	60	9%	NO	70
	BELL603: Data Communication (Lab)						

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	CO3	Experimentally verify the R, RC and UJT triggering of SCR.	71	60	11%	NO	75
	CO4	Experimentally verify the ripples in a rectified output.	69	60	9%	NO	70
	CO5	Do experimental demonstration of the half-wave, full-wave and bridge rectifier using SCR.	69	60	9%	NO	70
	BELL605: Industrial Electronics (LAB)						
BELL602: Digital Signal Processing (Lab)	CO 1	Differentiate between continuous and discrete time signal & systems.	58	60	-2%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO 2	Analysis of discrete time systems using z-transform.	56	60	-4%	More tutorial, solutions of previous year question papers	60
	CO 3	Design of simple digital filters by placing poles and zeros and their structure implementation.	57	60	-3%	Provide pactical project based learning	60
	CO 4	Computation of discrete Fourier transform and its efficient implementation using fast algorithm.	60	60	0%	NO	65
	CO 5	Design of Linear Phase FIR filters.	55	60	-5%	Provide pactical project based learning	60
	CO 6	IIR filter design to meet specified magnitude/phase response characteristics	51	60	-9%	More lab session and interaction with experts	60
	BELL602: Digital Signal Processing (Lab)						
BELL603: Data	CO1	Fabricate RS232 interface cable using different connectors.	57	60	-3%	More lab session and interaction with experts	60
	CO2	Establish connection between two system using modems.	60	60	0%	NO	65
	CO3	Establish a network of 4 system using coaxial cable and UTP cable.	55	60	-5%	Provide pactical project based learning	60
	CO4	Construct program using NRZ and Manchester codes.	69	60	9%	NO	70
	CO5	Develop the ability of working in team/group and learn professional ethics.	69	60	9%	NO	70
	BELL603: Data Communication (Lab)						

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semester 7	ELL-701: Advanced Control System	CO1	Describe quantitatively the basics of digital control system.	57	60	-3%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
		CO2	Examine the stability analysis of closed loop system in Z plane.	61	60	1%	NO	65
		CO3	Demonstrate an understanding of nonlinear control system	62	60	2%	NO	65
		CO4	Examine the stability of control system using Root Locus technique.	56	60	-4%	More tutorial, solutions of previous year question papers	60
		CO5	Represent any system by state space model	61	60	1%	NO	65
		CO6	Design PID controller to meet system performance.	62	60	2%	NO	65
		ELL-701: Advanced Control System						
	ELL702: Microwave Engineering	CO1	Analyze modes and dominant mode in rectangular waveguide and cylindrical waveguide.	56	60	-4%	Additional Classes taken, solutions of previous year question papers	60
		CO2	Calculate S-Matrix parameters for different port networks, and Microwave resonator.	42	60	-18%	More tutorial, solutions of previous year question papers	60
		CO3	Explain Microwave Network representations, H-plane tee, Magic tee, directional coupler.	49	60	-11%	More Seminars and lectures by expert	60
		CO4	Design isolator, basic microwave amplifiers, particularly klystrons, magnetron, and RF filters, basic RF oscillator and mixer models.	64	60	4%	NO	65
		CO5	Enumerate and demonstrate application of different diodes in microwave circuits.	31	60	-29%	Provide pactical project based learning	60
		CO6	Analyze different types of transmission lines and measurment parameters related to microwave circuits.	60	60	0%	NO	65
		ELL702: Microwave Engineering						
	ELL702	CO1	Investigate the properties of E-plane and H-plane tee.	63	60	3%	NO	65
		CO2	Examine the three port circulator.	62	60	2%	NO	65
		CO3	Demonstrate the performance of directional coupler.	66	60	6%	NO	70

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	CO4	Develop the ability to measure microwave frequency.	62	60	2%	NO	65
	CO5	Handle the experiment setups and kit properly.	59	60	-1%	Provide practical project based learning	60
ELL702: Microwave Engineering (LAB)							
ELL703: Cellular Mobile Communication	CO1	Build the concepts of wireless communication and cellular systems.	55	60	-5%	Additional Classes taken, More tutorial	60
	CO2	Analyze mobile radio propagation models and parameters related to it.	59	60	-1%	Additional Classes taken and More lab session	60
	CO3	Describe about cell splitting, sectoring, cell-site antenna and frequency management for cellular system.	52	60	-8%	More Seminars and lectures by expert	60
	CO4	Differentiate TDMA and FDMA.	66	60	6%	NO	70
	CO5	Analyze GSM system architecture and its frame structure.	31	60	-29%	Additional Classes By Expert, More interaction among students	60
	CO6	Describe spread spectrum multiple access and CDMA.	33	60	-27%	Additional Classes taken, More tutorial	60
	ELL703: Cellular Mobile Communication						
ELL704: VLSI Design	CO1	Design different VLSI Circuits.	49	60	-11%	Provide practical project based learning	60
	CO2	Describe MOSFET fundamentals its manufacturing and fabrication process.	52	60	-8%	Additional Classes taken, More tutorial	60
	CO3	Design inverter, parallel and series equivalent circuits and VLSI interconnects.	50	60	-10%	More lab sessions and interaction with experts	60

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	CO4	Illustrate circuit diagram, stick diagrams and layouts design rules for MOS.	52	60	-8%	Additional Classes taken and More lab sessions	60
	CO5	Describe MOS transistor characteristics and its various Performance parameters .	36	60	-24%	Additional Classes taken, More tutorial	60
	CO6	Design CMOS subsystems and Semiconductors memories- SRAM DRAM SRAM SPICE models.	52	60	-8%	More tutorial, solutions of previous year question papers	60
	ELL704: VLSI Design						
ELL-705: ATM Networks	CO1	Express the concept of ISDN, BISDN, and services of ATM networks.	51	60	-9%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO2	Interprete virtual path , virtual channel, transmission path.	66	60	6%	NO	70
	CO3	Classify the layers of ATM networks and compare it with OSI model.	60	60	0%	NO	65
	CO4	Illustrate the signaling protocols for BISDN and ATM network	81	60	21%	NO	85
	CO5	Calculate parameters for ATM networks implementation	55	60	-5%	Provide pactical project based learning	60
	CO6	Compare the different switching techniques.	45	60	-15%	Additional Classes By Expert, More interaction among students	60
	ELL-705: ATM Networks						
ELL-701:	CO1	Explain various control systems for the operations of DC motors and their applications.	58	60	-2%	Additional Classes taken, More tutorial, solutions of previous year question papers	60

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		CO2	Experimentally demonstrate the four quadrant operation of a DC motor.	59	60	-1%	Provide practical project based learning	60
		CO3	Experimentally characterize a stepper motor and its applications.	60	60	0%	NO	65
		CO4	Demonstrate the pulse width modulation technique for the speed control of motor.	56	60	-4%	Additional Classes By Expert, More interaction among students	60
		CO5	Demonstrate the operation of magnetic amplifier in different configurations.	65	60	5%	NO	70
		ELL-701: Advanced Control System (LAB)						
semester 8	ELL-801: Fiber optics &	CO1	Learn the basic elements of optical fiber transmission link, fiber modes configurations and fabrication techniques.	76	60	16%	NO	80
		CO2	Classify various optical sources, fiber splicing techniques, optical connectors with their principles	74	60	14%	NO	80
		CO3	Analyze different optical receivers and their noise performances	67	60	7%	NO	70
		CO4	Calculate the channel impairments like losses and dispersion	72	60	12%	NO	75
		CO5	Discuss Coherent optical transmission system, the installation and performance verification of digital optical fiber link	69	60	9%	NO	70
		CO6	Discriminate between different amplifiers and learn variety of networking aspects, FDDI, SONET, WDM	67	60	7%	NO	70
		ELL-801: Fiber optics & optical communication						
	ELL-802: Satellite	CO1	Explain basic concepts and terminologies of satellite communication	68	60	8%	NO	70
		CO2	Calculate the link power budget.	70	60	10%	NO	75
		CO3	Analyse the different multiple Access schemes for Satellite communication.	76	60	16%	NO	80
		CO4	Classify different Propagation effects in satellite	68	60	8%	NO	70
		CO5	Solve problems related to channel coding techniques.	72	60	12%	NO	75
		CO6	Distinguish different satellite system	70	60	10%	NO	75
		ELL-802: Satellite Communication						
	ELL-802:	CO1	Differentiate the direct and active satellite link.	67	60	7%	NO	70
		CO2	Illustrate the satellite transmission and reception of data/ signal.	63	60	3%	NO	65
		CO3	Evaluate the performance of satellite transmission and reception of data/ signal.	66	60	6%	NO	70

	CO4	Investigate uplink and downlink frequencies.	57	60	-3%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO5	Demonstrate satellite transmission and reception.	58	60	-2%	Provide practical project based learning	60
	ELL-802: Satellite Communication (LAB)						
ELL803: TV and RADAR	CO1	Explain the various components of the composite video signal, TV camera tube, and picture tube.	65	60	5%	NO	70
	CO2	Characterize various types of monochrome and color television systems.	64	60	4%	NO	70
	CO3	Analyze basic factors required for successful transmission and reception of TV signals.	65	60	5%	NO	70
	CO4	Explain the advanced topics in digital television and High definition television.	58	60	-2%	More Seminars and lectures by expert	60
	CO5	Evaluate the various performance factors related to the RADAR.	66	60	6%	NO	70
	CO6	Explain target detection and tracking using radar systems.	60	60	0%	NO	65
	ELL803: TV and RADAR Engg.						
ELL 804: Neural Network and	CO1	Explain the basic concepts of neural networks	76	60	16%	NO	80
	CO2	Analyze the concept of human neural structure & ANN.	87	60	27%	NO	90
	CO3	Analyze the various feed forward/ feedback neural networks.	80	60	20%	NO	85
	CO4	Examine different learning methodologies.	83	60	23%	NO	85
	CO5	Explain the concept of fuzziness involved in various systems and fuzzy set theory. .	47	60	-13%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO6	Analyze the application of fuzzy logic control to real time systems.	75	60	15%	NO	80
	ELL 804: Neural Network and Fuzzy systems						
BELL-004	CO1	Demonstrate different elements of fibre optical communication.	53	60	-7%	Provide practical project based learning	60

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	CO2	Examine fibre optic link, digital as well as analog.	52	60	-8%	More lab session and interaction with experts	60
	CO3	Determine the propagation loss in optical fibre	55	60	-5%	Provide practical project based learning	60
	CO4	Operate AM system using analog input in fiber optics	51	60	-9%	Additional Classes taken, More tutorial	60
	CO5	Operate AM system using digital input in fiber optics	60	60	0%	NO	65
	BELL-801 Fiber Optics and Optical Communication (Lab)						
BELL-803 TV And RADAR	CO1	Recognize different audio and video compression standards used for T.V.	53	60	-7%	Additional Classes taken, More tutorial, solutions of previous year question papers	60
	CO2	Model the faithful transmission and reception of monochrome and colour television signals.	60	60	0%	NO	65
	CO3	Identify faults in different sections of TV.	60	60	0%	NO	65
	CO4	Develop the ability of working in team/group and learn professional ethics..	62	60	2%	NO	65
	CO5	Handle the experiment kit properly.	64	60	4%	NO	65
	BELL-803 TV And RADAR Engg. (Lab)						
Major Project	CO 1.	Choose the proper electronics components for a system design based on the system requirement and components ratings.	82	60	22%	NO	85
	CO 2.	Design a printed circuit board and fabricate it.	81	60	21%	NO	85
	CO 3.	Utilize the new tools, algorithms, techniques to obtain solution of the project.	79	60	19%	NO	85
	CO 4.	Troubleshooting of an electronic circuit.	84	60	24%	NO	85
	CO 5.	Write a project report.	79	60	19%	NO	85
	CO 6.	Prepare oral demonstrations.	81	60	21%	NO	85
	Major Project						

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(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Department of Electronics Engineering

Item 8: Equivalence of Subjects

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P. K. Gupta

Item NO. 8-TO PROPOSE EQUIVALENCE OF SUBJECTS FOR ALL COURSES RUNNING IN THE VARIOUS SCHEMES

Department of Electronics Engineering

EC/ET- 3RD AND 4TH SEMESTER

S.NO.	SUBJECT NAME	CODE	YEAR	SIMILARITY %	WITH RESPECT TO FLEXIBLE SCHEME 2018 CODE
1	ELECTRONICS-I	3441	2010-11	70	ELECTRONICS-I(140301/200301) DC-1
	ELECTRONICS-I	3441	2013	70	ELECTRONICS-I(140301/200301) DC-1
	ELECTRONICS-I	ELL-302	2014	50	ELECTRONICS-I(140301/200301) DC-1
	ELECTRONICS-I	BELL-302	2015	50	ELECTRONICS-I(140301/200301) DC-1
	ELECTRONICS-I	BELL-302	2017	50	ELECTRONICS-I(140301/200301) DC-1
2	DIGITAL CIRCUITS AND SYSTEMS	4445	2010-11	60	DIGITAL CIRCUITS AND SYSTEMS [140302/200302] DC-2
	DIGITAL ELECTRONICS	EL-4443	2013	60	DIGITAL CIRCUITS AND SYSTEMS [140302/200302] DC-2
	DIGITAL CIRCUITS AND SYSTEM	ELL-404	2014	60	DIGITAL CIRCUITS AND SYSTEMS [140302/200302] DC-2
	DIGITAL CIRCUITS AND SYSTEM	BELL-303	2015	60	DIGITAL CIRCUITS AND SYSTEMS [140302/200302] DC-2
	DIGITAL CIRCUITS AND SYSTEM	BELL-303	2017	80	DIGITAL CIRCUITS AND SYSTEMS [140302/200302] DC-2
3	NETWORK THEORY	3444	2010-11	100	NETWORK THEORY[140303/200303] DC-3
	NETWORK THEORY	3443	2013	100	NETWORK THEORY[140303/200303] DC-3
	NETWORK THEORY	ELL-304	2014	100	NETWORK THEORY[140303/200303] DC-3
	NETWORK THEORY	BELL-304	2015	100	NETWORK THEORY[140303/200303] DC-3
	NETWORK THEORY	BELL-304	2017	100	NETWORK THEORY[140303/200303] DC-3
	SIGNALS AND SYSTEMS	BELL-405	2017	60	SIGNALS & SYSTEMS [140304/200304] DC-4
5	ELECTRONICS-2	4444	2010-11	50	ELECTRONICS-2 [140401/200401] DC-5
	ELECTRONICS-2	4444	2013	60	ELECTRONICS-2 [140401/200401] DC-5
	ELECTRONICS-2	ELL-405	2014	60	ELECTRONICS-2 [140401/200401] DC-5
	ELECTRONICS-2	BELL-402	2015	60	ELECTRONICS-2 [140401/200401] DC-5
	ELECTRONICS-2	BELL-402	2017	60	ELECTRONICS-2 [140401/200401] DC-5
6	COMMUNICATION SYSTEM-I	4441	2010-11	80	ANALOG COMMUNICATION [140403/200402] DC-6
	ANALOG COMMUNICATION	4441	2013	80	ANALOG COMMUNICATION [140403/200402] DC-6
	ANALOG COMMUNICATION	ELL-402	2014	80	ANALOG COMMUNICATION [140403/200402] DC-6
	ANALOG COMMUNICATION	BELL-403	2015	80	ANALOG COMMUNICATION [140403/200402] DC-6
	ANALOG COMMUNICATION	BELL-403	2017	80	ANALOG COMMUNICATION [140403/200402] DC-6
7	COMMUNICATION NETWORKS	4442	2010-11	100	COMMUNICATION NETWORKS [140403/200403] DC-7
	COMMUNICATION NETWORKS	3442	2013	100	COMMUNICATION NETWORKS [140403/200403] DC-7
	COMMUNICATION NETWORK AND TRANSMISSION LINE	3442	2014	100	COMMUNICATION NETWORKS [140403/200403] DC-7
	NETWORK SYNTHESIS AND FILTER DESIGN	BELL-404	2015	60	COMMUNICATION NETWORKS [140403/200403] DC-7
	NETWORK SYNTHESIS AND FILTER	BELL-404	2017	60	COMMUNICATION NETWORKS [140403/200403] DC-7

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8	INSTRUMENTATION & MEASUREMENT	3Z33	2010-11	60	ELECTRONICS MEASUREMENT & INSTRUMENTATION [140404/200404] DC-8
	INSTRUMENTATION & MEASUREMENT	3Z33	2013	60	ELECTRONICS MEASUREMENT & INSTRUMENTATION [140404/200404] DC-8
	INSTRUMENTATION & MEASUREMENT	ELL-305	2014	60	ELECTRONICS MEASUREMENT & INSTRUMENTATION [140404/200404] DC-8
	INSTRUMENTATION & MEASUREMENT	BELL-305	2015	60	ELECTRONICS MEASUREMENT & INSTRUMENTATION [140404/200404] DC-8
	ELECTRONICS MEASUREMENT & INSTRUMENTATION	BELL-305	2017	50	ELECTRONICS MEASUREMENT & INSTRUMENTATION [140404/200404] DC-8
EC/ET- 5TH SEM TO 8TH SEM					
S.NO.	SUBJECT NAME	CODE	YEAR	SIMILARITY %	WITH RESPECT TO SCHEME 2017 CODE
1	MICROPROCESSOR & INTERFACING	5441	2010-11	80	MICROPROCESSOR & INTERFACING [BELL/BETL/ELL-502/5441EL]
	MICROPROCESSOR & INTERFACING	5441	2013	80	MICROPROCESSOR & INTERFACING [BELL/BETL/ELL-502/5442EL]
	MICROPROCESSOR & INTERFACING	ELL-502; 5441	2014	80	MICROPROCESSOR & INTERFACING [BELL/BETL/ELL-502/5443EL]
	MICROPROCESSOR & INTERFACING	BELL-502	2015	80	MICROPROCESSOR & INTERFACING [BELL/BETL/ELL-502/5444EL]
2	ELECTROMEGNETIC FIELDS	5442	2010-11	90	ELECTROMEGNETIC FIELDS [BELL-503]
	ELECTROMEGNETIC FIELDS	5442	2013	100	ELECTROMEGNETIC FIELDS [BELL-503]
	ELECTROMEGNETIC FIELDS	ELL-503; 5442	2014	100	ELECTROMEGNETIC FIELDS [BELL-503]
	ELECTROMEGNETIC FIELDS	BELL-503	2015	100	ELECTROMEGNETIC FIELDS [BELL-503]
3	LINEAR CONTROL THEORY	5443	2010-11	80	LINEAR CONTROL THEORY [BELL/BETL-504]
	LINEAR CONTROL THEORY	5443	2013	100	LINEAR CONTROL THEORY [BELL/BETL-504]
	LINEAR CONTROL THEORY	ELL-504; 5443	2014	100	LINEAR CONTROL THEORY [BELL/BETL-504]
	LINEAR CONTROL THEORY	BELL-504	2015	100	LINEAR CONTROL THEORY [BELL/BETL-504]
4	COMMUNICATION SYSTEM-II	5444	2010-11	50	DIGITAL COMMUNICATION [BELL/BETL-504]
	COMMUNICATION SYSTEM-II	5444	2013	90	DIGITAL COMMUNICATION [BELL/BETL-504]
	COMMUNICATION SYSTEM-II	ELL-504; 5444	2014	90	DIGITAL COMMUNICATION [BELL/BETL-504]
	COMMUNICATION SYSTEM-II	BELL-505	2015	90	DIGITAL COMMUNICATION [BELL/BETL-504]
5	ANTENNA & WAVE PROPAGATION	6441	2010-11	100	ANTENNA & WAVE PROPAGATION [BELL/BETL/ELL-601]
	ANTENNA & WAVE PROPAGATION	6441	2013	100	ANTENNA & WAVE PROPAGATION [BELL/BETL/ELL-601]
	ANTENNA & WAVE PROPAGATION	ELL-601; 6441	2014	100	ANTENNA & WAVE PROPAGATION [BELL/BETL/ELL-601]
	ANTENNA & WAVE PROPAGATION	BELL-601	2015	100	ANTENNA & WAVE PROPAGATION [BELL/BETL/ELL-601]
6	DIGITAL SIGNAL PROCESSING	6442	2010-11	80	DIGITAL SIGNAL PROCESSING [BELL/BETL/ELL-602]
	DIGITAL SIGNAL PROCESSING	6442	2013	100	DIGITAL SIGNAL PROCESSING [BELL/BETL/ELL-602]

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	DIGITAL SIGNAL PROCESSING	ELL-602; 6442	2014	100	DIGITAL SIGNAL PROCESSING [BELL/BETL/ELL-602]
	DIGITAL SIGNAL PROCESSING	BELL-602	2015	100	DIGITAL SIGNAL PROCESSING [BELL/BETL/ELL-602]
7	DATA COMMUNICATION	6443	2010-11	100	DATA COMMUNICATION [BELL/BETL/ELL-603]
	DATA COMMUNICATION	6443	2013	100	DATA COMMUNICATION [BELL/BETL/ELL-603]
	DATA COMMUNICATION	ELL-603; 6443	2014	100	DATA COMMUNICATION [BELL/BETL/ELL-603]
	DATA COMMUNICATION	BELL-603	2015	100	DATA COMMUNICATION [BELL/BETL/ELL-603]
8	ELECTRONIC SYSTEM DESIGN	6444	2010-11	50	ELECTRONIC SYSTEM DESIGN [BELL/BETL/ELL-604]
	ELECTRONIC SYSTEM DESIGN	6444	2013	100	ELECTRONIC SYSTEM DESIGN [BELL/BETL/ELL-604]
	ELECTRONIC SYSTEM DESIGN	ELL-604; 6444	2014	100	ELECTRONIC SYSTEM DESIGN [BELL/BETL/ELL-604]
	ELECTRONIC SYSTEM DESIGN	BELL-604	2015	100	ELECTRONIC SYSTEM DESIGN [BELL/BETL/ELL-604]
9	INDUSTRIAL ELECTRONICS	6445	2010-11	80	INDUSTRIAL ELECTRONICS [BELL/BETL/ELL-605]
	INDUSTRIAL ELECTRONICS	6445	2013	100	INDUSTRIAL ELECTRONICS [BELL/BETL/ELL-605]
	INDUSTRIAL ELECTRONICS	ELL-605; 6445	2014	100	INDUSTRIAL ELECTRONICS [BELL/BETL/ELL-605]
	INDUSTRIAL ELECTRONICS	BELL-605	2015	100	INDUSTRIAL ELECTRONICS [BELL/BETL/ELL-605]
10	ADVANCE CONTROL SYSTEM	7441	2010-11	80	ADVANCE CONTROL SYSTEM [BELL/BETL/ELL-701]
	ADVANCE CONTROL SYSTEM	7441	2013	100	ADVANCE CONTROL SYSTEM [BELL/BETL/ELL-701]
	ADVANCE CONTROL SYSTEM	ELL-701	2014	100	ADVANCE CONTROL SYSTEM [BELL/BETL/ELL-701]
	ADVANCE CONTROL SYSTEM	BELL-701	2015	100	ADVANCE CONTROL SYSTEM [BELL/BETL/ELL-701]
11	MICROWAVE ENGINEERING	7442	2010-11	100	MICROWAVE ENGINEERING [BELL/BETL/ELL-702]
	MICROWAVE ENGINEERING	7442	2013	100	MICROWAVE ENGINEERING [BELL/BETL/ELL-702]
	MICROWAVE ENGINEERING	ELL-702; 7442	2014	100	MICROWAVE ENGINEERING [BELL/BETL/ELL-702]
	MICROWAVE ENGINEERING	BELL-702	2015	100	MICROWAVE ENGINEERING [BELL/BETL/ELL-702]
12	CELLULAR & MOBILE COMMUNICATION	7443	2010-11	80	CELLULAR & MOBILE COMMUNICATION [BELL/BETL/ELL-703]
	CELLULAR & MOBILE COMMUNICATION	7443	2013	100	CELLULAR & MOBILE COMMUNICATION [BELL/BETL/ELL-703]
	CELLULAR & MOBILE COMMUNICATION	ELL-703; 7443	2014	100	CELLULAR & MOBILE COMMUNICATION [BELL/BETL/ELL-703]
	CELLULAR & MOBILE COMMUNICATION	BELL-704	2015	100	CELLULAR & MOBILE COMMUNICATION [BELL/BETL/ELL-703]
13	VLSI DESIGN	7444	2010-11	50	VLSI DESIGN [BELL/BETL/ELL-704]
	VLSI DESIGN	7444	2013	80	VLSI DESIGN [BELL/BETL/ELL-704]
	VLSI DESIGN	ELL-704; 7444	2014	100	VLSI DESIGN [BELL/BETL/ELL-704]
	VLSI DESIGN	BELL-704	2015	100	VLSI DESIGN [BELL/BETL/ELL-704]
14	ASYNCHRONOUS TRANSFER MODE [ATM]	7445	2010-11	100	ATM [BELL/BETL/ELL-705/7445EL]
	ASYNCHRONOUS TRANSFER MODE [ATM]	7445	2013	100	ASYNCHRONOUS TRAFER MODE [BELL/BETL/ELL-705]

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	ASYNCHRONOUS TRANSFER MODE [ATM]	ELL-705; 7445	2014	100	ASYNCHRONOUS TRAFER MODE [BELL/BETL/ELL-705]
	ASYNCHRONOUS TRANSFER MODE [ATM]	BELL-705	2015	100	ASYNCHRONOUS TRAFER MODE [BELL/BETL/ELL-705]
15	FIBER OPTICS & OPTICAL COMMUNICATION	8441	2010-11	100	FIBER OPTICS & OPTICAL COMMUNICATION [BELL/BETL/ELL-801]
	FIBER OPTICS & OPTICAL COMMUNICATION	8441	2013	100	FIBER OPTICS & OPTICAL COMMUNICATION [BELL/BETL/ELL-801]
	FIBER OPTICS & OPTICAL COMMUNICATION	ELL-801; 8441	2014	100	FIBER OPTICS & OPTICAL COMMUNICATION [BELL/BETL/ELL-801]
	FIBER OPTICS & OPTICAL COMMUNICATION	BELL-801	2015	100	FIBER OPTICS & OPTICAL COMMUNICATION [BELL/BETL/ELL-801]
16	SATELLITE COMMUNICATION	8442	2010-11	50	SATELLITE COMMUNICATION [BELL/BETL/ELL-802]
	SATELLITE COMMUNICATION	8442	2013	100	SATELLITE COMMUNICATION [BELL/BETL/ELL-802]
	SATELLITE COMMUNICATION	ELL-802; 8442	2014	100	SATELLITE COMMUNICATION [BELL/BETL/ELL-802]
	SATELLITE COMMUNICATION	BELL-802	2015	100	SATELLITE COMMUNICATION [BELL/BETL/ELL-802]
17	TV & RADAR ENGINEERING	8443	2010-11	100	TV & RADAR ENGINEERING [BELL/BETL/ELL-803]
	TV & RADAR ENGINEERING	8443	2013	100	TV & RADAR ENGINEERING [BELL/BETL/ELL-803]
	TV & RADAR ENGINEERING	ELL-803; 8443	2014	100	TV & RADAR ENGINEERING [BELL/BETL/ELL-803]
	TV & RADAR ENGINEERING	BELL-803	2015	100	TV & RADAR ENGINEERING [BELL/BETL/ELL-803]
18	NEURAL NETWORK & FUZZY SYSTEMS	8444	2010-11	100	NEURAL NETWORK & FUZZY SYSTEMS [BELL/BETL/ELL-804]
	NEURAL NETWORK & FUZZY SYSTEMS	8444	2013	100	NEURAL NETWORK & FUZZY SYSTEMS [BELL/BETL/ELL-804]
	NEURAL NETWORK & FUZZY SYSTEMS	ELL-804; 8444	2014	100	NEURAL NETWORK & FUZZY SYSTEMS [BELL/BETL/ELL-804]
	NEURAL NETWORK & FUZZY SYSTEMS	BELL-804	2015	100	NEURAL NETWORK & FUZZY SYSTEMS [BELL/BETL/ELL-804]

**ME/M.TECH
CCN/MW-1ST SEM**

S.NO.	SUBJECT NAME	CODE	SIMILARITY %	WITH RESPECT TO FLEXIBLE SCHEME 2018 CODE
1	COMPUTER NETWORKS	MCCL912/CCN1402	100	600102/MCCL-912/CCN-1402
2	R.F. CIRCUITS	MMWL-913/MW/CCN1413	100	600103/MCCL-914/CCN-1413/610105/MW-1413/MMWL-913

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3	DIGITAL COMMUNICATION	NO CHANGE	100	600104/MCCL-913/CCN-1404/610104/MW-1404/MMWL-912
4	MODERN CONTROL THEORY	NO CHANGE	100	600105/MCCL-915/CCN-1405
5	MICROWAVE DEVICES	NO CHANGE	100	610102/MW-1411/MMWL-914
6	ADVANCED ELECTROMAGNETICS	NO CHANGE	100	610103/MW-1412/MMWL-915

CCN/MW-IIIND SEM

S.NO.	SUBJECT NAME	CODE	SIMILARITY %	WITH RESPECT TO FLEXIBLE SCHEME 2018 CODE
1	ADVANCED MICROPROCESSOR	NO CHANGE	100	600201/MCCL-924/CCN-2404
2	DIGITAL CONTROL SYSTEM	NO CHANGE	100	600202/MCCL-922/CCN-2402
3	INFORMATION & DESIGN CODING THEORY	NO CHANGE	100	600203/MCCL-923/CCN-2403/610206/MW/CCN-2403/MMWL-925
4	MICROWAVE CIRCUIT DESIGN	NO CHANGE	100	600204/MCCL-921/MMWL-924/610205/MW/CCN-2414
5	DIGITAL SIGNAL PROCESSING	NO CHANGE	100	600208/MCCL-925/610203/MMWL-923/MW/CCN-2409
6	ANTENNA THEORY	NO CHANGE	100	610201/MW-2411/MMWL-921
7	MICROWAVE MEASUREMENT	NO CHANGE	100	610202/MW-2412/MMWL-922

CCN/MW-IIIRD SEM

S.NO.	SUBJECT NAME	CODE	SIMILARITY %	WITH RESPECT TO FLEXIBLE SCHEME 2018 CODE
1	ADVANCED COMMUNICATION SYSTEM	NO CHANGE	100	600301/MCCL-931/610301/MMWL-931/CCN/MW-3401
2	RADAR SYSTEM	NO CHANGE	100	600303/MCCL-932/610303/MMWL-932/CNN/MW-3411

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Department of Electronics Engineering

Item 9: Complete syllabi and scheme separately for the 3 schemes which are running presently.

- *Batch 2014-18 (Codes beginning with CEL/MEL/EEL/Ell/CSL....etc)*
- *Batches 2015-19 & 2016-2020 (Codes beginning with BCEL/ BMEL/ BEEL/ BELL/ BCSL....etc)*
- *Batch 2017-2021 & Batch 2018-2022 (Six digit codes; upto IV semester only)*

Pran Singh

for

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(An Autonomous Institutions under RGPV, Bhopal)

Course of Study and Scheme of Examination

B.E. (Electronics)

III Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted						Credits Allotted Subject wise			Total Credits	Remark	
				Theory Slot			Practical Slot			Total Marks	L	T			P
				End Sem	Mid Sem MST (Best of the Two)	Quiz Assignment	End Sem	Term Work							
							Lab Work & Sessional	Assign-Ment / Quiz							
1	ELL301	3XM1	Mathematics – II	70	20	10	-	-	-	100	3	1	-	4	
2	ELL302	3441	Electronic – I	70	20	10	30	10	10	150	3	1	2	6	
3	ELL303	3442	Communication Network & Transmission Lines	70	20	10	-	-	-	100	3	1	-	4	
4	ELL304	3443	Network Theory	70	20	10	30	10	10	150	3	1	2	6	
5	ELL305	3Z33	Instrumentation & Measurement	70	20	10	30	10	10	150	3	1	2	6	
6	ELP306	3X76	Computer Programming III	-	-	-	30	10	10	50	-	-	2	2	
7	ELS307	3406	Self Study (Internal Assessment)	-	-	-	-	-	50	50	-	-	2	2	
8	ELS308	3407	Seminar / Group Discussion (Internal Assessment)	-	-	-	-	-	50	50	-	-	2	2	Total Marks
			Total	350	100	50	120	40	140	800	15	05	12	32	800

Minimum Passing Marks

(A) Theory (End Sem) 31%
Practical (End Sem) 50%

(B) Theory Block Aggregate 35%
Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

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Course of Study and Scheme of Examination

B.E. (Electronics)

IV Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted						Credits Allotted Subject wise			Total Credits	Remark		
				Theory Slot			Practical Slot			Total Marks	L	T			P	
				End Sem	Mid Sem MST (Best of the Two)	Quiz Assignment	End Sem	Term Work								
								Lab Work & Session Al	Assignment / Quiz							
1	ELL401	4XM1	Mathematics - III	70	20	10	-	-	-	100	3	1	-	4		
2	ELL402	4441	Analog Communication	70	20	10	30	10	10	150	3	1	2	6		
3	ELL403	4442	Digital Computer Organization	70	20	10	-	-	-	100	3	1	-	4		
4	ELL404	4443	Digital Electronics	70	20	10	30	10	10	150	3	1	2	6		
5	ELL405	4444	Electronics - II	70	20	10	30	10	10	150	3	1	2	6		
6	ELP406	4X56	Computer Programming-IV	-	-	-	30	10	10	50	-	-	2	2		
7	ELS407	4406	Self Study (Internal Assessment)	-	-	-	-	-	50	50	-	-	2	2		
8	ELS408	4407	Seminar / Group Discussion (Internal Assessment)	-	-	-	-	-	50	50	-	-	2	2	Total Marks	
Total				350	100	50	120	40	140	800	15	05	12	32	800	

Minimum Passing Marks

(A) Theory (End Sem) 31%
Practical (End Sem) 50%

(B) Theory Block Aggregate 35%
Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

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Course of Study and Scheme of Examination

B.E. (Electronics)

V Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted						Credits Allotted Subject wise			Total Credits	Remark	
				Theory Slot			Practical Slot			Total Marks	L	T			P
				End Sem	Mid Sem MST (Best of the Two)	Quiz Assignment	End Sem	Term Work							
								Lab Work & Sessional	Assignment / Quiz						
1	ELL501	5ZH1	Principal of Mgt. & Managerial Economics	70	20	10	-	-	-	100	3	1	-	4	
2	ELL502	5441	Microprocessors & Interfacing	70	20	10	30	10	10	150	3	1	2	6	
3	ELL503	5442	Electromagnetic Fields	70	20	10	-	-	-	100	3	1	-	4	
4	ELL504	5443	Linear Control Theory	70	20	10	30	10	10	150	3	1	2	6	
5	ELL505	5444	Digital Communication	70	20	10	30	10	10	150	3	1	2	6	
6	ELP506	5446	Electronics Workshop	-	-	-	30	10	10	50	-	-	2	2	
7	ELS507	5406	Self Study	-	-	-	-	-	50	50	-	-	2	2	
8	ELS508	5407	Seminar/Group Discussion	-	-	-	-	-	50	50	-	-	2	2	Total Marks
			Total	350	100	50	120	40	140	800	15	05	12	32	800

Minimum Passing Marks

(A) Theory (End Sem) 31%
Practical (End Sem) 50%

(B) Theory Block Aggregate 35%
Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

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P. K. Gupta

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Course of Study and Scheme of Examination

B.E. (Electronics)

VI Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted						Credits Allotted Subject wise			Total Credits	Remark	
				Theory Slot			Practical Slot			Total Marks	L	T			P
				End Sem	Mid Sem MST (Best of the Two)	Quiz Assignment	End Sem	Term Work							
								Lab Work & Sessional	Assignment / Quiz						
1	ELL601	6441	Antenna & Wave Propagation	70	20	10	-	-	-	100	3	1	-	4	
2	ELL602	6442	Digital Signal Processing	70	20	10	30	10	10	150	3	1	2	6	
3	ELL603	6443	Data Communication	70	20	10	30	10	10	150	3	1	2	6	
4	ELL604	6444	Electronic System Design	70	20	10	-	-	-	100	3	1	-	4	
5	ELL605	6445	Industrial Electronics	70	20	10	30	10	10	150	3	1	2	6	
6	ELP606	6446	Minor Project	-	-	-	30	10	10	50	-	-	2	2	
7	ELS607	6406	Self Study	-	-	-	-	-	50	50	-	-	2	2	
8	ELS608	6407	Seminar/Group Discussion	-	-	-	-	-	50	50	-	-	2	2	Total Marks
			Total	350	100	50	120	40	140	800	15	05	12	32	800

Minimum Passing Marks

(A) Theory (End Sem) 31%
Practical (End Sem) 50%

(B) Theory Block Aggregate 35%
Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

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Course of Study and Scheme of Examination

B.E. (Electronics)

VII Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted							Credits Allotted Subject wise			Total Credits	Remark
				Theory Slot			Practical Slot			Total Marks	L	T	P		
				End Sem	Mid Sem Test (Best of the Two)	Quiz Assignment	End Sem	Term Work							
								Lab Work & Sessional	Assign-Ment / Quiz						
1	ELL701	7441	Advance Control System	70	20	10	30	10	10	150	3	1	2	6	
2	ELL702	7442	Microwave Engg.	70	20	10	30	10	10	150	3	1	2	6	
3	ELL703	7443	Cellular & Mobile Communication	70	20	10	30	10	10	150	3	1	2	6	
4	ELL704	7444	VLSI Design	70	20	10	-	-	-	100	3	1	-	4	
5	ELL705	7445	Elective-I	70	20	10	-	-	-	100	3	1	-	4	
6	ELP706	7446	Major Project-I	-	-	-	30	10	10	50	-	-	2	2	
7	ELS707	7406	Self Study	-	-	-	-	-	50	50	-	-	2	2	
8	ELS708	7407	Seminar/Group Discussion	-	-	-	-	-	50	50	-	-	2	2	Total Marks
			Total	350	100	50	120	40	140	800	15	5	12	32	

Minimum Passing Marks

(A) Theory (End Sem) 31%

Practical (End Sem) 50%

(B) Theory Block Aggregate 35%

Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

Elective Subject : (i) Selected Topics in Communication, (ii) ATM Networks, (iii) CMOS Technology, (iv) Data Mining and Warehousing

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Course of Study and Scheme of Examination

B.E. (Electronics)

VIII Semester

W.E.F. JULY 2014

S. No.	Subject New Code	Subject Code	Subject Name & Title	Maximum Marks allotted						Credits Allotted Subject wise			Total Credits	Remark	
				Theory Slot			Practical Slot			Total Marks	L	T			P
				End Sem	Mid Sem MST (Best of the Two)	Quiz Assignment	End Sem	Term Work							
								Lab Work & Sessional	Assign-Ment / Quiz						
1	ELL801	8441	Fiber Optics & Optical Communication	70	20	10	30	10	10	150	3	1	2	6	Total Marks
2	ELL802	8442	Satellite Communication	70	20	10	30	10	10	150	3	1	2	6	
3	ELL803	8443	TV & Radar Engg.	70	20	10	30	10	10	150	3	1	2	6	
4	ELL804	8444	Elective- II	70	20	10	-	-	-	100	3	1	-	4	
5	ELP805	8445	Major Project-II	-	-	-	100	50	-	150	-	-	8	8	
6	ELS806	8406	Self Study	-	-	-	-	-	50	50	-	-	2	2	
7	ELS807	8407	Seminar/Group Discussion	-	-	-	-	-	50	50	-	-	2	2	
			Total	280	80	40	190	80	130	800	12	04	18	34	800

Minimum Passing Marks

(A) Theory (End Sem) 31%

Practical (End Sem) 50%

(B) Theory Block Aggregate 35%

Practical Block Aggregate 50%

(C) Duration of Theory Paper (End Sem) 3 hrs

Elective Subjects: (i) Image processing & Pattern Recognition, (ii) Neural Network and Fuzzy Systems, (iii) Nanotechnology, Instrumentation

(iv) Biomedical

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

B.E. III Semester (ELECTRONICS) GROUP B *For batches admitted in July, 15 & July, 16 (to be implemented in July, 2017)*

Subject wise distribution of marks and corresponding credits

S.NO.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem.	Mid Sem. Test	Quiz/ Assignment	End Sem.	Term work					
							Lab Work & Sessional					
1.	BELL301	Material Science	70	20	10	-	-	100	3	1	-	4
2.	BELL302	Electronics I	70	20	10	30	20	150	2	1	2	4
3.	BELL303	Digital Circuits and systems	70	20	10	30	20	150	2	1	2	4
4.	BELL304	Network theory	70	20	10	30	20	150	2	1	2	4
5.	BELL305	Electronics measurement and instrumentation	70	20	10	-	-	100	3	1	-	4
6.	BELP306	Computer Lab	-	-	-	30	20	50	-	-	4	2
7.	BELS307	Idea Generation	-	-	-	-	50	50	-	-	4	2
8.	BELS308	Communication Skills	-	-	-	-	50	50	-	-	4	2
9.		NSS/NCC	-	-	-	-	-	-	-	-	-	Qualifier
Total			350	100	50	120	180	800	12	5	18	26

GROUP A: (Civil, Mechanical, Computer Science, Information Technology, Biotech)

GROUP B: (Electrical, Electronics, Chemical, Automobile, Electronics & Telecommunication)

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

B.E. IV Semester (ELECTRONICS)

GROUP B

For batches admitted in July, 15 & July, 16 (to be implemented in July, 2017)

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem.	Mid Sem. Test	Quiz/ Assignment	End Sem.	Term work Lab Work & Sessional					
1.	BELL401	Mathematics-III	70	20	10	-	-	100	3	1	-	4
2.	BELL402	Electronics II	70	20	10	30	20	150	2	1	2	4
3.	BELL403	Analog communication	70	20	10	30	20	150	2	1	2	4
4.	BELL404	Network Synthesis and Filter Design	70	20	10	30	20	150	2	1	2	4
5.	BELL405	Signal and systems	70	20	10	-	-	100	3	1	-	4
6.	BELP406	Simulation Lab		-	-	30	20	50	-	-	4	2
7.	BELS407	Seminar/ Presentation/ GD		-	-	-	50	50	-	-	4	2
8.	BELS408	Integrated Ethics and Attitude		-	-	-	50	50	-	-	4	2
9.		NSS/NCC	-	-	-	-	-	-	-	-	-	Qualifier
Total			350	100	50	120	180	800	12	5	18	26

GROUP A: (Civil, Mechanical, Computer Science, Information Technology, Biotech)

GROUP B: (Electrical, Electronics, Chemical, Automobile, Electronics & Telecommunication)

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

B.E. V Semester (Electronics) (GROUP A)

For batches admitted in July, 15 & July, 16 (to be implemented in July, 2017)

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem	Mid Sem	Quiz/	End Sem	Lab work & Sessional					
1.	BELL501	Principles of Management & Managerial Economics	70	20	10	-	-	100	3	1	-	4
2.	BELL502	Microprocessors & Interfacing	70	20	10	30	20	150	3	1	2	5
3.	*	Elective -1	70	20	10	-	-	100	3	1	-	4
4.	BELL504	Linear Control Theory	70	20	10	30	20	150	3	1	2	5
5.	BELL505	Digital Communication	70	20	10	30	20	150	3	1	2	5
6.	BELP506	Electronics Workshop	-	-	-	30	20	50	-	-	2	1
7.	BELS507	Self-Study (Internal Assessment)	-	-	-	-	50	50	-	-	2	1
8.	BELS508	Seminar & Group Discussion (Internal Assessment)	-	-	-	-	50	50	-	-	2	1
Total			350	100	50	120	180	800	15	5	12	26

GROUP A: (Electrical, Electronics, Computer Science, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

01 Theory period: 01 Credit; 02 Practical Periods: 01 Credit

Elective-I: BELL 503 Electromagnetic Fields BELL 509 Optimization techniques BELL 510 Renewable energy resources BELL 511 Mechatronics

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

B.E. VI Semester (Electronics) (GROUP A)

For batches admitted in July, 15 & July, 16 (to be implemented in July, 2017)

Subject wise distribution of marks and corresponding credits

S.No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem	Mid Sem	Quiz/	End Sem	Lab work & Sessional					
1.	BELL601	Antenna & Wave Propagation	70	20	10	-	-	100	3	1	-	4
2.	BELL602	Digital Signal Processing	70	20	10	30	20	150	3	1	2	5
3.	BELL603	Data Communication	70	20	10	30	20	150	3	1	2	5
4.	*	Elective-II	70	20	10	-	-	100	3	1	-	4
5.	BELL605	Industrial Electronics	70	20	10	30	20	150	3	1	2	5
6.	BELP606	Minor Project - I	-	-	-	30	20	50	-	-	2	1
7.	BELS607	Self-Study (Internal Assessment)	-	-	-	-	50	50	-	-	2	1
8.	BELS608	Seminar & Group Discussion (Internal Assessment)	-	-	-	-	50	50	-	-	2	1
		Total	350	100	50	120	180	800	15	5	12	26

01 Theory period: 01 Credit; 02 Practical Periods: 01 Credit

Elective-II: BELL 604 Electronic System Design BELL609 Data Structure BELL610 Integrated circuits BELL 611 Microcontroller and Embedded Systems

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

**B.E. VII Semester
Electronics Engineering**

Subject wise distribution of marks and corresponding credits

S. No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem	Mid Sem	Quiz/	End Sem	Lab work & Sessional					
1.	BELL701	Advanced Control System	70	20	10	30	20	150	3	1	2	5
2.	BELL702	Microwave Engg.	70	20	10	30	20	150	3	1	2	5
3.	BELL703	Cellular & Mobile Communication	70	20	10	-	-	100	3	1	-	4
4.	BELL704	VLSI Design	70	20	10	-	-	100	3	1	-	4
5.	BELL705	Elective - III (ATM Networks)	70	20	10	-	-	100	3	1	-	4
6.	BELP706	Major Project - I	-	-	-	60	40	100	-	-	4	2
7.	BELS707	Self-Study	-	-	-	-	50	50	-	-	2	1
8.	BELS708	Seminar/Group Discussion	-	-	-	-	50	50	-	-	2	1
		Total	350	100	50	120	180	800	15	5	12	26

Elective-III: (i) Selected topics in communication (ii) ATM Networks (iii) CMOS Technology (iv) Data Mining and Warehousing

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A UGC-Autonomous Institute affiliated to RGPV, Bhopal)

**B.E. VIII Semester
Electronics Engineering
Subject wise distribution of marks and corresponding credits**

S. No.	Subject Code	Subject Name	Maximum Marks Allotted					Total Marks	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot			L	T	P	
			End Sem	Mid Sem	Quiz/	End Sem	Lab work & Sessional					
1.	BELL801	Fiber Optics and Optical Communication	70	20	10	30	20	150	3	1	2	6
2.	BELL802	Satellite communication	70	20	10	30	20	150	3	1	2	6
3.	BELL803	TV and Radar Engg	70	20	10	30	20	150	3	1	2	6
4.	*	Elective – IV	70	20	10	-	-	100	3	1	-	4
5.	BELL805	Major Project – II				100	50	150	-	-	8	8
6.	BELP806	Self-Study	-	-	-	-	50	50	-	-	2	2
7.	BELS807	Seminar/Group Discussion	-	-	-	-	50	50	-	-	2	2
		Total	280	80	40	190	210	800	12	4	18	34

Minimum Passing Marks: (A) Theory (End Sem)35% (B) Theory Block Aggregate 35% (C) Duration of Theory Paper (End Sem) 3hrs

Practical (End Sem) 50% Practical Block Aggregate 50%

Elective-IV BELL 808 Image Processing and Pattern Recognition
BELL 810 Biomedical Instrumentation

BELL804 Neural Network and Fuzzy Systems

BELL 809 Nanotechnology

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Electronics Engineering

Scheme Structure & Semester-wise credit distribution (under flexible curriculum design)

Reference Course Scheme Structure & Semester-wise credit distribution[#]

[#]This is a suggestive structure, departments may adopt it with required variation, as per the need and demand of their discipline/branch

General Definition:

L	Lecture
T	Tutorial
P	Practical
HSMC	Humanities and Social Sciences including Management Courses
BSC	Basic Science Courses
ESC	Engineering Science Courses
DC	Departmental Core
DE	Departmental Elective
OC	Open Category
DLC	Departmental Laboratory Courses
MC	Mandatory Course



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Definition of Credit:

1 Hr. Lecture (L) per week	1 credit
1 Hr. Tutorial (T) per week	1 credit
2 Hours Practical(Lab)/week	1 credit

Range of Credits:

A student will be eligible to get Under Graduate degree after earning minimum 170 credits. A student will be eligible to get Under Graduate degree with Honours or additional Minor Engineering Specialization, if he/she completes 190 credits. These could be acquired through MOOCs.

Note: In partial fulfillment of flexible curriculum design, a mandate provision to earn credits through E-Learning (NPTEL/MOOC etc.) based Departmental Core/Elective (DC/DE) has been introduced. Additionally, to give the students more flexibility to orient themselves as per their interest while retaining the discipline specific knowledge and capabilities, provision for Open Category (OC) Courses have been made.

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P. K. Gupta

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Proposed Structure of Undergraduate Engineering program (Electronics Engineering)

S. No.	Category	Suggested Breakup of Credits (Total 160) (as proposed by AICTE)	Component wise credit allotment (To be calculated by the concerned Department) Electronics Engineering
1	Humanities and Social Sciences including Management Courses (HSMC)	12**	12
2	Basic Science Courses (BSC)	25**	20
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc. (ESC)	24**	21
4	Departmental Core Courses (DC)	48**	52
5	Departmental Elective Courses relevant to specialization/branch (DE)	18**	20
6	Open Category- Electives from other technical and /or emerging subjects (OC)	18**	15
7	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions. (DLC/SWAYAM/NPTEL/MOOC)	15**	22
8	Mandatory Course(MC)		08
	Total	160**	170

***Minor variation is allowed as per need of the respective disciplines. Please consult the AICTE model curriculum as a standard reference, if needed.*

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Scheme of Examination

GROUP A: I Semester For batches admitted in Academic Session 2018-19 Onwards

B.Tech. I Semester (Electronics Engineering)

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 Exam.	Quiz/ Assignment	End Sem.	Lab work & Sessional					
1.	100201	BSC-1	Engineering Physics	70	20	10	30	20	150	2	1	2	4
2.	100202	HSMC-1	Energy, Environment, Ecology & Society	70	20	10	-	-	100	3	-	-	3
3.	100203	ESC-1	Basic Computer Engineering	70	20	10	30	20	150	3	-	2	4
4.	100204	ESC-2	Basic Mechanical Engineering	70	20	10	30	20	150	3	-	2	4
5.	100205	ESC-3	Basic Civil Engineering & Mechanics	70	20	10	30	20	150	3	-	2	4
6.	100206	HSMC-2	Language Lab. & Seminars	-	-	-	30	20	50	-	-	4	2
Total				350	100	50	150	100	750	14	1	12	21
NSS/NCC				Qualifier									
Induction programme of first three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations													

GROUP A: (Electrical, Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

01 Theory Period = 1 Credit; 02 Practical Periods = 1 Credit



MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Scheme of Examination

Group A: II Semester *For batches admitted in Academic Session 2018-19 Onwards*

B.Tech. II Semester (Electronics Engineering)

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.	100101	BSC-2	Engineering Chemistry	70	20	10	30	20	150	3	-	2	4
2.	100102	BSC-3	Engineering Mathematics-I	70	20	10	-	-	100	3	1	-	4
3.	100103	HSMC-3	Technical English	70	20	10	30	20	150	3	-	2	4
4.	100104	ESC-4	Basic Electrical & Electronics Engineering	70	20	10	30	20	150	3	-	2	4
5.	100105	ESC-5	Engineering Graphics	70	20	10	30	20	150	3	-	2	4
6.	100106	ESC-6	Manufacturing Practices	-	-	-	30	20	50	-	-	2	1
Total				350	100	50	150	100	750	15	1	10	21
NSS/NCC				Qualifier									
Summer Internship Project –I (Institute Level) (Qualifier): Minimum two-week duration													

GROUP A: (Electrical, Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

Val  P. S. Gupta

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

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

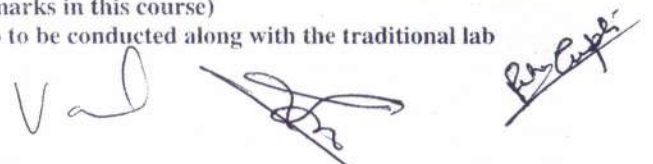
For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

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. Exam.	Quiz/ Assignment	End Sem	Term work Lab Work & Sessional					
1.	100001	BSC-4	Mathematics-II	70	20	10	-	-	100	3	1	-	4
2.	140301	DC-1	Electronics - I (DC-1)	70	20	10	30	20	150	2	1	2	4
3.	140302	DC-2	Digital Circuits and Systems (DC-2)	70	20	10	30	20	150	3	-	2	4
4.	140303	DC-3	Network Theory (DC-3)	70	20	10	30	20	150	3	-	2	4
5.	140304	DC-4	Signals & Systems (DC-4)	70	20	10	-	-	100	4	-	-	4
6.	140305	DLC-1*	Software Lab Introduction to MATLAB(DLC-1)	-	-	-	30	20	50	-	-	2	1
7.	140306	SEMINAR/ SELF STUDY	Self learning/Presentation (SWAYAM/NPTEL/ MOOC)#	-	-	-	-	25	25	-	-	2	1
8.	140307	DLC-2	Summer Internship Project-I (Institute Level) (Evaluation)	-	-	-	-	25	25			4	2
			Total	350	100	50	120	130	750	15	2	14	24
9.	100002 [§]	MC-1	Biology for Engineers (Audit Course)	70	20	10	-	-	100	3		-	03
NSS/NCC				Qualifier									

* Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation.

§ This course will run for Group A/B & Architecture students in III/IV semester respectively (Marks will not be included in the aggregate; but it is compulsory to obtain pass marks in this course)

* Virtual Lab to be conducted along with the traditional lab



MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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GROUP A: (Electrical, Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

Scheme of Examination

B.Tech. IV Semester (Electronics Engineering)

For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

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. Exam.	Quiz/ Assignment	End Sem.	Term work					
								Lab Work & Sessional					
1.	100003	BSC-5	Mathematics- III	70	20	10	-	-	100	2	2	-	4
2.	140401	DC-5	Electronics II (DC-5)	70	20	10	30	20	150	2	1	2	4
3.	140402	DC-6	Analog Communication (DC-6)	70	20	10	30	20	150	2	1	2	4
4.	140403	DC-7	Communication Networks (DC-7)	70	20	10	-	-	100	3	1	-	4
5.	140404	DC-8	Electronics Measurement and Instrumentation (DC-8)	70	20	10	-	-	100	3	1	-	4
6.	100004	MC-2	Cyber Security	70	20	10	-	-	100	2	1	-	3
7.	140405	DLC-3*	Hardware Lab PCB Design Lab (DLC-2)	-	-	-	30	20	50	-	-	4	2
Total				420	120	60	90	60	750	14	7	8	25
NSS/NCC				Qualifier									
Summer Internship Project-II (Softskills Based) for two weeks duration: Evaluation in V Semester													

*Virtual Lab to be conducted along with the traditional lab

V

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

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

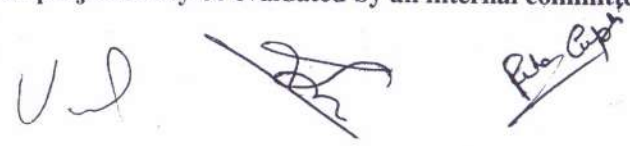
For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

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 Exam.	Quiz/ Assisgnment	End Sem.	Lab work & Sessional					
1.	100005*	HSMC-4	Ethics, Economics, Entrepreneurship & Management	70	20	10	-	-	100	3	-	-	3
2.	140501	DC-9	Electromagnetic Theory (DC-09)	70	20	10	-	-	100	3	1	-	4
3.	140502	DC-10	Digital Signal Processing (DC-10)	70	20	10	30	20	150	2	1	2	4
4.	140503	DC-11	Linear Control Theory (DC-11)	70	20	10	30	20	150	2	1	2	4
5.	140504	DC-12	Digital Communication (DC-12)	70	20	10	30	20	150	2	1	2	4
6.	140505	DLC-4	Minor Project-I**	-	-	-	30	20	50	-	-	2	1
7.	140506	DLC-5	Summer Internship Project-II (Evaluation)	-	-	-	25	-	25	-	-	6	3
8.	140507	SEMINAR/ SELF STUDY	Self-learning/Presentation (SWAYAM/NPTEL/ MOOC)#	-	-	-	-	25	25	-	-	2	1
Total				350	100	50	145	105	750	12	4	16	24
9.	100006 ^s	MC-3	Indian Constitution & Traditional Knowledge (Audit Course)	70	20	10	-	-	100	3	-	-	03
				Department level activity/workshop/awareness programme to be conducted; certificate of compliance to be submitted by HoD to the Exam Controller through Dean Academics									
		Additional Course for Honours or minor Specialization	Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization										

* Group A/B programmes will offer this course in V/VI Semester respectively.

^s Group A/B programmes will offer this course in V/VI Semester respectively. (Marks will not be included in the aggregate; but it is compulsory to obtain pass marks in this course)

^o The minor project-I may be evaluated by an internal committee for awarding sessional marks.



MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation

GROUP A: (Electrical, Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

Scheme of Examination

B.Tech. VI Semester(Electronics Engineering)

For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

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 Exam.	Quiz/ Assignment	End Sem.	Lab work & Sessional					
1.	140601	DC-13	Microprocessors & Interfacing (DC-13)	70	20	10	30	20	150	2	1	2	4
2.	140602 [#]	DE-1	DE*	70	20	10	-	-	100	4	-	-	4
3.	140603	DE-2	DE*	70	20	10	-	-	100	4	-	-	4
4.	140604	DE-3	DE*	70	20	10	-	-	100	4	-	-	4
5.	140605	OC-1	OC*	70	20	10	-	-	100	2	1	-	3
6.	100007	MC-4	Disaster Management	70	20	10	-	-	100	3	-	-	3
7.	140606	DLC-6	Minor Project-II	-	-	-	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 Course for Honours or minor Specialization	Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization										

[#] Group A/B programmes will offer this course in V/VI Semester respectively.

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

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P. K. Gupta

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

**Scheme of Examination
B.Tech. VII Semester (Electronics Engineering)**

For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

S.No.	Subject Code	Category Code	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					
1.	140701	DE-4	DE	70	20	10	-	-	100	3	-	-	3
2.	140702	DE-5	DE*	70	20	10	-	-	100	2	-	-	2
3.	140703	OC-2	OC	70	20	10	-	-	100	2	1	-	3
4.	140704	OC-3	OC	70	20	10	-	-	100	3	-	-	3
5.	100008	MC-5	Intellectual Property Rights (IPR)	70	20	10	-	-	100	2	-	-	2
6.	140705	DLC-7	OFC/MW/VLSI/Industrial Electronics Lab	-	-	-	50	50	100	-	-	4	2
7.	140706	DLC-8	Summer Internship Project-III (04 weeks) (Evaluation)	-	-	-	50	50	100	-	-	4	2
8.	140707	DLC-9	Creative Problem Solving (Evaluation)	-	-	-	25	25	50	-	-	2	1
Total				350	100	50	125	125	750	12	1	10	18
		Additional Course for Honours or minor Specialization	Permitted to opt for maximum two additional courses for the award of Honours or Minor specialization										

*This course must be run through SWAYAM/NPTEL/ MOOC

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

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


For batches admitted in Academic Session 2017-18 & 2018-19 Onwards (w.e.f. July, 2018)

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.	140801	DE-6	DE*	70	20	10	-	-	100	3	-	-	3
2.	140802	OC-4	OC*	70	20	10	-	-	100	3	-	-	3
3.	140803	OC-5	OC*	70	20	10	-	-	100	3	-	-	3
4.	140804	DLC-10	Internship/ Project	-	-	-	250	150	400	-	-	6	3
5.	140805	DLC-11	Innovative Technical Contribution [#]	-	-	-	-	50	50	-	-	2	1
Total				210	60	30	250	200	750	9	-	8	13
		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

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
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Department of Electronics Engineering

Item 10: Value Added Courses (VACs)

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Principles

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ANNEXURE-VIII

Department of Electronics Engineering

List of Value Added Courses (VACs)

S. No.	Name of Course	Course Highlights
1.	Circuit Design Using LTSPICE	Spice, Basic components: resistors, capacitors, Inductors, Designing of basic circuits using spice schematic editor. Characteristics of Diode, BJT MOSFETs. Designing of Rectifier, Clipper, Clamper, Voltage limiter; RC Coupled amplifier, Basic Op-amp Circuits; RC. Phase shift Oscillator, Multivibrator; Schmitt trigger, Window detector; precision half and full wave rectifier; Half/Full adder, Flip Flops; Counter, Analog to Digital and Digital to Analog converter.
2.	MATLAB for Electronics Engineers	Introduction to MATLAB tool box. Plotting operations. Waveform generation. Signal operations and system analysis using MATLAB, Fourier analysis. Digital filter design. Signal Sources. Analog and Digital modulation/ demodulation. Performance evaluation. Pulse shaping, filters and channel modelling. System interconnections, gain and dynamics. Compensator design. Image display and exploration, GUI tools.
3.	Computer Aided Designing of Microwave Circuits & Components	CST Microwave Studio and IE3D software simulations of printed microwave Circuits, Microwave filters, microwave Tee networks, Directional Coupler, AMC, HIS, and Phased array, wire and printed microwave antennas, Antenna array, microwave circuit measurements

VAD

Sub. Cyber

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