SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(An Autonomous Institution)
Puducherry

1st UG - Board of Studies Meeting in the department of
Electronics and Communication Engineering

for the Programme
B.Tech – Electronics and Communication Engineering

Venue
Seminar Hall, Department of ECE
Sri Manakula Vinayagar Engineering College
Madagadipet, Puducherry – 605 107

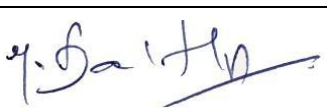
Date & Time
17-07-2020 & 10.00 am

Minutes of Board of Studies

The first Board of Studies meeting for B.Tech. Electronics and Communication Engineering was held on 17th July 2020 at 10:00 A.M in the Seminar Hall, Department of ECE, Sri Manakula Vinayagar Engineering College with the Head of the Department in the Chair.

The following members were present for the BoS meeting

Sl.No	Name of the Member with Designation and official Address	Responsibility in the BoS	Signature
1	**Dr. P. Raja** Professor and Head Department of ECE, SMVEC	Chairman	
External Members			
2	**Dr.Gerardine Immaculate Mary** Professor, Department of Embedded Systems, Vellore Institute of Technology (VIT), 600048, Vellore, Tamil Nadu, India	University Nominee	
3	**Dr. N. Venkateswaran** Professor, Department of ECE, SSN - College of Engineering, Rajiv Gandhi Salai (OMR) Kalavakkam – 603 110 Tamil Nadu, India	Academic Member	

4	**Dr. V. R. Vijayakumar** Associate Professor & Head, Department of ECE, Anna University, Regional Campus, Coimbatore – 46	Academic Member	
5	**Mr. C. Gnanavel** Manager, Production and Technology Lenovo India Ltd., Puducherry-605007	Industry Member	
Internal Members			
6	**Dr.V.Bharathi,** Professor / ECE **Specialization:** Wireless Communication	Member	
7	**Dr.R.Ramya,** Professor/ ECE **Specialization:** ECE	Member	
8	**Dr. J.Pradeep,** Associate Professor / ECE **Specialization:** Image Processing	Member	
9	**Dr. R.Kurunjimalar,** Associate Professor / ECE **Specialization:** Mobile Satellite Communication	Member	
10	**Dr. D. Jagadiswary** Associate Professor / ECE **Specialization:** Biometric Security	Member	
11	**Prof. R. Ilaiyaraja** Assistant Professor / ECE **Specialization:** VLSI Design	Member	
12	**Prof.Egalite Francis** Assistant Professor **Specialization:** Mathematics	Member	
13	**Prof. K. Oudayakumar** Associate Professor **Specialization:** Physics	Member	
14	**Dr. S. Deepa** Professor **Specialization:** Chemistry	Member	
15	**Dr.D.Jaichithra** Associate Professor **Specialization:** English	Member	
Co-opted Members			
16	**Mr. Dharanidharan. G** Associated Functional Consultant, Birlasoft Limited No 283/4, Prince info-city -II,8th Floor,A Wing, Old Mahabalipuram Road, Chennai - 600096	Alumni Member	

AGENDA OF THE MEETING

Item No.	Particulars
BoS/UG/ECE 1.1	Discuss about the curriculum Structure of B.Tech – Electronics and Communication Engineering
BoS/UG/ECE 1.2	To discuss and approve the B.Tech. Degree Regulations 2020 (R-2020) and Curriculum from I to VIII semesters for the B.Tech – Electronics and Communication Engineering for the students admitted in the Academic Year 2020-21. To discuss and approve the syllabi for I to IV Semesters under R-2020 Regulations for UG Programme: B.Tech. Electronics and Communication Engineering from the AY 2020-21 for the students to be admitted in the year 2020-21
BoS/UG/ECE 1.3	To discuss and approve the B.Tech. Degree Regulation 2019 and Curriculum I to VIII semesters under for the B.Tech – Electronics and Communication Engineering for the students admitted in the Academic Year 2019-20. To discuss and approve the syllabi for I to IV semesters under R-2019 Regulations for UG Programme: B.Tech. Electronics and Communication Engineering in the AY 2020-21 for the students admitted in the year 2019-20
BoS/UG/ECE 1.4	To discuss and approve the B.Tech. Degree Curriculum and Syllabi from I to VIII semesters under Pondicherry University Regulations 2013 (R-2013) for the B.Tech – Electronics and Communication Engineering for the students admitted in the Academic Year 2017-18 and 2018-19.
BoS/UG/ECE 1.5	To discuss about the uniqueness of the Curriculum (R-2020)
BoS/UG/ECE 1.6	To discuss and approve Evaluation Systems
BoS/UG/ECE 1.7	To discuss about the Innovative Teaching / Practices Methodology adopted to handle the emerging / Advanced Technological concept courses
BoS/UG/ECE 1.8	Any other item with the permission of chair

Minutes of the Meeting

Dr. P. Raja, Chairman, BoS opened the meeting with warm welcome and introduced the external members, to the internal and co-opted members and thanked them for accepting to become the member of the Board of Studies.

The Chairman proceeded with the overview of the institution's accreditation, autonomous status, department's intake and details of the staff members, and the meeting subsequently discussed the agenda items.

BoS/UG/ECE 1.1	The BoS members reviewed the curriculum of B.Tech. Electronics and Communication Engineering and suggested the following points. • The total credits for the B.Tech Programme are acceptable for the regulations R-2020 and R-2019 • Course structure has an effective flow of knowledge on engineering • Accepted that the curriculum will make students specialized in a domain by their elective subjects With the above-mentioned recommendation, the BoS members resolved the curriculum and recommended it to the Academic Council.
BoS/UG/ECE 1.2	The BoS members reviewed B.Tech - Degree Regulations 2020 (R-2020), Curriculum and Syllabi from I to IV semesters and suggested the following points **Semester – I** • All the courses of the first semester are approved by the BoS members with the following suggestion o Suggestions for improving the Unit-I syllabus content of the “Semiconductor Physics” course offered in semester-I. **Semester - II** • BoS members approved all Second Semester courses **Semester - III** • All the courses of the third semester are approved by the BoS members with a few suggestions o Suggestions to change the course syllabus "Electro Magnetic Field Theory" with certain concepts of Antenna and Waveguides given in Unit-V. These topics may be included in accordance with the subject of “Transmission Lines and Antennas” offered in Semester VI o The detailed content of the course including sub-topics to be given in the "Signals and Systems" course o Suggestions had been given to include a few simulation experiments in Analog Electronic Circuits Laboratory to verify the results in both practical and simulations. Also, to give the exposure to the simulation tools. **Semester - IV** • All the courses of the fourth semester are approved by the BoS members with the following suggestions o In the Mandatory Course, suggestions were given to change the title of "Mobile Repairing" into "Mobile Servicing." With the above-mentioned changes incorporated and given in Annexure – I, the BoS members resolved the syllabi for I to IV semesters under Regulation 2020 and recommended it to the Academic Council.

BoS/UG/ECE 1.3	The BoS members reviewed and approved the B.Tech. Degree Regulations 2019, syllabi from I to IV semesters and recommended to the Academic Council
BoS/UG/ECE 1.4	Members of the BoS reviewed and recommended the Curriculum and Syllabi from I to VIII semesters under Pondicherry University Regulations 2013 for the B.Tech-Electronics and Communication Engineering to the Academic Council
BoS/UG/ECE 1.5	The BoS members reviewed and appreciated the uniqueness of the curriculum (R-2020) and the following points were noted for implementation of the curriculum • Employability Enhancement Course (EEC) was provided to the students to enhance the knowledge of the students in the field of advanced technology and to shape them into skill-oriented personalities • Agreed that the students will be multi-talented as they are given skill-oriented courses and multidisciplinary courses • The BoS members appreciated the internship scheme, which was included as a curriculum. • All the open elective syllabi were appreciated by the BoS members • The Bos members appreciated the process of publishing papers by the students in the reputed Journals
BoS/UG/ECE 1.6	The BoS Members approved the evaluation system followed in the regulations 2019 and 2020 and recommended to the Academic Council
BoS/UG/ECE 1.7	Discussed and approved on various innovative Teaching practices, Methodology adopted to handle the emerging / Advanced Technological concept courses
BoS/UG/ECE 1.8	The BoS members approved the panel of Examiners and recommended to Academic Council

Dr. P. Raja, Chairman – BoS and Head of Department, Electronics and Communication Engineering, concluded the meeting at 1:30 pm with vote of thanks.

Dr. P. RAJA
Chairman – BoS

Annexure – I

U20BST104	SEMICONDUCTOR OPTOELECTRONICS	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

- To impart knowledge on semiconductors properties and crystalline structures
- To provide the knowledge on semiconductors light emitting diodes and its applications
- To instruct the principle of lasers and its properties
- To teach the interaction between light and semiconductor
- To study the basic principle of photodetectors

Course Outcomes

After completion of the course, the students will be able to

CO1 – Know the semiconductor conducting property with energy band analysis. (K1)
CO2 – Explain the properties of semiconductor light emitting diodes. (K2)
CO3 – Summarize the operating principle of lasers. (K2)
CO4 – Discuss the working of fibre optics with various operating profiles. (K2)
CO5 – Describe the photo detectors with its characteristics. (K1)

UNIT I INTRODUCTION TO SEMICONDUCTOR PHYSICS (9 Hrs)

Semiconductor Physics: E-k diagram, Density of states, Occupation probability, Fermi level and quasi-Fermi level (variation by carrier concentration and temperature), p-n junction, Metal-semiconductor junction (Ohmic and Schottky); Carrier transport, generation, and recombination; Semiconductor materials of interest for optoelectronic devices, band gap modification, hetero-structures

UNIT II SEMICONDUCTOR LIGHT EMITTING DIODES (LEDs) (9 Hrs)

Rate equations for carrier density, Radioactive and non-radioactive recombination mechanisms in semiconductors, LED: device structure, materials, characteristics, and figures of merit.

UNIT III SEMICONDUCTOR LASERS (9 Hrs)

Review of laser physics; Rate equations for carrier- and photon-density, and their steady state solutions, Laser dynamics, Relaxation oscillations, Input-output characteristics of lasers. Semiconductor laser: structure, materials, device characteristics, and figures of merit; DFB, DBR, and vertical-cavity surface-emitting lasers (VECSEL), Tunable semiconductor lasers.

UNIT IV LIGHT-SEMICONDUCTOR INTERACTION (9 Hrs)

Optical transitions in bulk semiconductors: absorption, spontaneous emission, and stimulate demission; Joint density of states, Density of states for photons, Transition rates (Fermi's golden rule), Optical loss and gain; Photovoltaic effect, Exciton, Drude model.

UNIT V PHOTODETECTORS (9 Hrs)

Types of semiconductor photodetectors p-n junction, PIN, and Avalanche and their structure, materials, working principle, and characteristics, Noise limits on performance; Solar cells.
Low-dimensional optoelectronic devices: Quantum-well, wire, and dot based LEDs, lasers, and photo detectors.

Text Books

1. J. Singh, “Electronic and Optoelectronic Properties of Semiconductor Structures”, Cambridge University Press; 1 edition, March 2007.
2. Umesh Mishra, Jasprit Singh, “Semiconductor Device Physics and Design”, Springer; 2008
3. Pallab Bhattacharya “Semiconductor Opto Electronic Devices”, Prentice Hall of India Pvt., Ltd., New Delhi, 2006.

Reference Books

1. B. E. A. Saleh and M. C. Teich, “Fundamentals of Photonics”, John Wiley & Sons, 2012
2. S. M. Sze, “Semiconductor Devices: Physics and Technology”, Wiley, 2014.
3. A. Yariv and P. Yeh, “Photonics: Optical Electronics in Modern Communications”, Oxford University Press,New York (2009).
4. S C Gupta, Opto Electronic Devices and Systems, Prentice Hal of India, 2005.
5. S.O. Kasap, “Optoelectronics and photonics”, Pearson, New Delhi (2009).

Web References

1. https://nptel.ac.in/courses/115102026/
2. https://nptel.ac.in/courses/115102103/
3. https://freevideolectures.com/course/3293/semiconductor-optoelectronics
4. https://en.wikipedia.org/wiki/Optoelectronics
5. https://www.tutorialspoint.com/basic_electronics/basic_electronics_optoelectronic_diodes.htm

COs /POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	1	1	1	-	-	-	-	1	3	-	1
2	3	2	1	1	1	1	1	-	-	-	-	1	3	-	1
3	3	2	1	1	1	1	1	-	-	-	-	1	3	-	1
4	3	2	1	1	1	1	1	-	-	-	-	1	3	-	1
5	3	2	1	1	1	1	1	-	-	-	-	1	3	-	1

Correlation Level: 1-Low, 2-Medium, 3- High

U20ECT305	SIGNALS AND SYSTEMS	L	T	P	C	Hrs
		2	2	0	3	60

Course Objectives

- To understand the Mathematical Representation of Signals and Systems
- To describe the concept of Fourier transform and Laplace transform
- To describe the concept of discrete time Fourier transform and Z transform
- To understand the behavior of continuous time systems
- To understand the behavior of discrete time systems

Course Outcomes

After completion of the course, the students are able to

CO1–Describe the elementary signals and properties of the systems by mathematical representation **(K2)**
CO2–Discuss the properties of continuous time signals using Fourier and Laplace Transforms **(K2)**
CO3–Discuss the properties of discrete time signals using DTFT and Z - transform **(K2)**
CO4 –Demonstrate the behavior of continuous time systems **(K3)**
CO5–Demonstrate the behavior of discrete time systems **(K3)**

UNIT I IINTRODUCTION TO SIGNALS AND SYSTEMS (12 Hrs)

Introduction to Signals and Systems, Classification of Signals based on Independent Variable, Elementary Signals - Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential signals, Amplitude and Time Operation on Signals, Classification of Systems, Properties of Systems.

UNIT II ANALYSIS OF CT SIGNALS (12 Hrs)

Fourier series, Properties of Continuous Time Fourier Series, Trigonometric and Exponential Fourier Series Fourier Transform, Properties of Continuous Time Fourier Transform, Gibbs Phenomena, Dirichlet Conditions, Laplace Transforms, Properties of Laplace Transforms-R.O.C -Inverse Laplace transform

UNIT III ANALYSIS OF DT SIGNALS (12 Hrs)

Discrete Time Fourier Transform, Properties of Discrete Time Fourier Transform, Inverse Discrete Fourier Transform, Z-Transform, Properties of Z-Transforms--R.O.C –Inverse Z transform

UNIT IV CONTINOUS TIME SYSTEMS (12 Hrs)

LTI continuous time systems- Differential equations, Transfer function and Impulse response , Convolution Integral- Block diagram representation - State variable techniques – State equations

UNIT V DISCRETE TIME SYSTEMS (12 Hrs)

Difference equations, System function and impulse response, Convolution Sum, Block diagram representation, Convolution Sum, State equations for discrete time systems, Frequency response of discrete time signals

Text Books

1. Alan V. Oppenheim, Alan S. Willsky, Syed Hamid Nawab, “Signals and Systems”, 2nd Edition, Pearson, 2013
2. P. Ramesh Babu,” Signals and Systems”, Fifth Edition, Scitech Publishers, 2014.
3. A.Nagoor Kani, “Signals and Systems”, Tata McGraw Hill Education Private Limited,2010

Reference Books

1. B. P. Lathi, “Principles of Linear Systems and Signals”, 2nd Edition, Oxford University Press, 2009
2. Michael Corithios, “Signals, Systems, Transforms, and Digital Signal Processing with MATLAB”, CRC Press. 2018
3. Tarun Kumar Rawat, “Signals and Systems”, Oxford University Press, 2010Grewal B.S., Higher Engineering Mathematics, 40th Edition, Khanna Publishers, Delhi 2007
4. R.E.Zeimer, W.H.Tranter and R.D.Fannin, “Signals & Systems – Continuous and Discrete”, Pearson, 2007.
5. Charles L. Philips, J. M. Parr and E. A. Riskin, Signal, Systems and Transforms, Pearson Education.

Web References

1. https://nptel.ac.in/courses/108/104/108104100/
2. https://lecturenotes.in/subject/36/signals-and-systems-ss
3. http://signalsandsystems.wikidot.com/notes-signals-problems
4. http://signalsandsystems.wikidot.com/problems
5. http://home.npru.ac.th/sopapun/Solved_Problems.pdf

COs /POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	2	-	-	-	-	-	-	-	1	3	1	-
2	3	2	2	2	-	-	-	-	-	-	-	1	3	1	-
3	3	2	2	2	-	-	-	-	-	-	-	1	3	1	-
4	3	2	2	2	-	-	-	-	-	-	-	1	3	1	-
5	3	2	2	2	-	-	-	-	-	-	-	1	3	1	-

Correlation Level: 1-Low, 2-Medium, 3- High

U20ECT306	ELECTROMAGNETIC FIELD THEORY	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

- To gain knowledge on vector calculus
- To acquire knowledge of various static electric and magnetic fields
- To gain knowledge on different applications of electromagnetic fields
- To acquire knowledge on Electromagnetic Fields in various Materials
- To understand about Maxwell's equations in various forms

Course Outcomes

After completion of the course, the students are able to

CO1 - Relate vector calculus to electrostatic fields and infer the behavior of static electric field of various Geometries**. (K2)**

CO2- Summarize the applications of Electrostatics **(K2)**

CO3- Explore the knowledge in magneto statics fields and its applications. **(K2)**

CO4- Infer knowledge about electromagnetic fields in various materials and Boundary conditions **(K2)**

CO5 - Extract Maxwell's equation in different forms to determine field waves, potential waves, Energy and Charge conservation conditions. **(K2)**

UNIT- I ELECTROSTATIC FIELDS (9 Hrs)

Vector Calculus - Scalar and Vector fields - Coordinate Systems and Transformation, Del - Gradient of a Scalar- Divergence of a Vector and Divergence Theorem-Curl of a Vector and Stokes Theorem, Coulombs Law - Coulombs Law in Vector Form - Electric Field Intensity - Electric Field due to discrete charges. electric fields due to point, line, surface and volume charge distributions – Electric flux density – Gauss law – Electric potential – potential gradient – Divergence and divergence theorem – Poisson's and Laplace equations.

UNIT– II ELECTROSTATIC APPLICATIONS (9 Hrs)

Field due to dipoles – dipole moment – Current and current density – Conductors and Dielectrics - Boundary conditions – capacitance – Dielectric interface – Capacitance of system of conductors – Dielectric constant and Dielectric strength - Energy stored in capacitor – Energy density

UNIT- III MAGNETOSTATICS FIELDS (9 Hrs)

Biot - Savart Law and Field Intensity - Magnetic Field intensity due to a finite and infinite wire carrying a current - Magnetic field intensity on the axis of a circular loop carrying a current - Amperes Circuital Law - Applications - infinite line current-infinite sheet of current-infinitely long coaxial transmission line. Magnetic Potential- Magnetic Scalar and Vector Potentials - Magnetic Flux Density

UNIT- IV MAGNETIC FORCES, MATERIALS AND DEVICES (9Hrs)

Forces due to magnetic field- Lorentz force equation for a moving charge- Force on a Current Element-Force between Two Current Elements. Magnetic Torque and moment- Magnetic dipole - Magnetization in materials – Classification of Magnetic materials –- magnetic boundary conditions – Inductors - inductances – magnetic energy stored in inductors.

UNIT- V TIME VARYING ELECTROMAGNETIC FIELDS (9 Hrs)

Maxwell's Equations - Faradays Law - Displacement Current – Maxwell's Equations in integral form and differential form - Time-Varying Potentials. Wave Propagation-Helmholtz wave Equation-wave motion in free space- perfect dielectric - lossy dielectric and good conductor- Skin effect. Poynting vector and power considerations.

Text Books

1. Matthew Sadiku, 'Elements of Electromagnetics', Oxford University Publication, 2018
2. Edward C. Jordon, Keith G. Balmain, "Electromagnetic Waves and Radiating Systems", Pearson Education, Prentice hall, 2015.
3. William H. Hayt and John A. Buck, 'Engineering Electromagnetics', McGraw Hill Special Indian edition, 2014.

Reference Books

1. Joseph A.Edminister, 'Theory and Problems of Electromagnetics-Schaum series'-TMH-2007.
2. J.D.Kraus and D.A Fleisch, Electromagnetics with applications,5/e-Tata McGraw-Hill- 2011.
3. Bhag Guru and HuseyinHiziroglu," Electromagnetic Field Theory Fundamentals", Cambridge University Press, 2nd edition, 2004
4. S.P.Ghosh, Lipika Datta, "ElectromagneticFieldTheory", 1stedition,McGrawHillEducation(India) Private Limited, 2012.
5. David K. Cheng, "Field and Wave Electromagnetics", 2nd edition, Pearson Education, 1989.

Web References

1. https://nptel.ac.in/courses/108/104/108104087/
2. https://www.scribd.com/lists/3218090/electromagnetics
3. https://ocw.mit.edu/resources/res-6-001-electromagnetic-fields-and-energy-spring-2008/
4. https://www.khanacademy.org/science/physics/magnetic-forces-and-magnetic-fields
5. http://www.transmission-line.net/search/label/Electromagnetics

COs /POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-
2	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-
3	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-
4	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-
5	3	2	1	1	-	-	-	-	-	-	-	-	3	-	-

Correlation Level: 1-Low, 2-Medium, 3- High

U20ECP303	ANALOG ELECTRONIC CIRCUITS LABORATORY	L	T	P	C	Hrs
		0	0	2	1	30

Course Objectives

- To design and measure frequency response, signal handling capacity, input and output impedances of various types of amplifiers
- To design and construct various Multivibrators
- To design and construct circuits using PSPICE
- To learn and understand about Miller integrator and Bootstrap ramp generator
- To learn and understand power amplifiers

Course Outcomes

After completion of the course, the students are able to

CO1–Demonstrate and test different types of amplifiers **(K2)**

CO2 –Interpret the parameter from the characteristics of integrator, differentiator, clampers and voltage Multipliers **(K2)**

CO3 –Demonstrate and test various types of oscillators **(K2).**

CO4–Describe the concepts of electronic circuits using PSPICE (K2)

CO5–Operate and test a power amplifier **(K3).**

LIST OF EXPERIMENTS

All the experiments to be verified with simulated results

1. a) Design and measurement of frequency response, signal handling capacity, input and output impedances of CE amplifier.
   b) Differential amplifier.
2. Design and measurement of frequency response, signal-handling capacity, input and output impedances of common source and common drain FET amplifier.
3. Design and measurement of frequency response, signal handling capacity, input and output impedances of cascade amplifier and cascade amplifier.
4. To design, construct and measure the frequency response, input impedance and output impedance of (i) voltage shunt (ii) voltage series negative feedback amplifiers with and without feedback.
5. To design, construct and study the low frequency and high frequency oscillators.
   i. To design, construct and study the RC Integrator, RC Differentiator, Clampers and Voltage Multipliers
   ii. To design, construct and study the UJT relaxation oscillator
6. a) To design, construct and study the BJT based Astable multi vibrator and Mono stable multi vibrator
   b) To design, construct and study the BJT based Bistable multi vibrator and Schmitt trigger circuits.
7. a) To design, construct and study the Miller integrator and Bootstrap ramp generator
   b) To simulate the Bootstrap ramp generator circuit using PSPICE
8. To obtain the frequency Vs. power and load Vs. power characteristics of Class A power amplifier
9. To obtain the frequency Vs. power and load Vs. power characteristics of Class B complementary symmetry amplifier

Reference Books

1. Donald A Neaman, Electronic Circuits Analysis and design, 7th Edition
2. Muhammad H. Rashid , Microelectronic Circuits: Analysis and Design, 3rd Edition, Cengage Learning
3. David A. Bell, Electronic Devices and Circuits, Prentice Hall of India, 5th edition
4. Muhammad H. Rashid , Microelectronic Circuits: Analysis and Design, 3rd Edition, Cengage Learning.
5. David A Bell, Electronic Devices and Circuits Oxford University Press 5th Edition, 2008.

Web References

1. https://nptel.ac.in/courses/108102095/
2. https://www.docsity.com/en/exercises/engineering/analogue-ic-design/
3. http://www.owlnet.rice.edu/~dodds/Files331/analog_expt.
4. https://www.allaboutcircuits.com/worksheets/
5. https://www.electronics-tutorials.ws/

COs /POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	1	2	1	2	-	-	-	2	-	-	1	3	-	2
2	3	2	2	1	2	-	-	-	2	-	-	1	3	-	2
3	3	2	2	1	2	-	-	-	2	-	-	1	3	-	2
4	3	1	2	1	2	-	-	-	2	-	-	1	3	-	2
5	3	1	2	1	2	-	-	-	2	-	-	1	3	-	2

Correlation Level: 1-Low, 2-Medium, 3- High

SKILL DEVELOPMENT COURSE 3

(Choose anyone of the below three courses)

U20ECS403	1.MOBILE SERVICING	L	T	P	C	Hrs
		0	0	2	-	30

Course Objectives

- Learn and identification of standard mobile components
- To understand and troubleshooting hardware and software related problems
- To study the various faults arising due to corrupt software
- To understand the various flasher boxes and Flashing software for various brands.
- To develop the ability to troubleshooting faults using advanced techniques

Course Outcomes

After completion of the course, the students are able to

CO1 - Infer the fundamental of standard mobile components. **(K2)**
CO2 –Examine and troubleshoot mobile hardware and software related problems. **(K4)**
CO3 - Inspect about various faults arising due to corrupt software **(K4)**
CO4 - Identify different flasher boxes and Flashing software for various brands **(K4)**
CO5 –Identify and troubleshooting faults using advanced techniques **(K4)**

MODULE I: HARDWARE-BASED EXPERIMENTS

1. Study of various tools and equipment used for mobile phone repairs.
2. Introduction of various Circuit of the Motherboard and Various Components used in mobile phone
3. Assembling and disassembling of various models of mobile phones.
4. Identifying the fault and troubleshooting for repairing of various fault
5. Common repair procedure for hardware and software related faults.

MODULE II: SOFTWARE BASED EXPERIMENTS

1. Detailed study of various faults arising due to corrupt software
2. Introduction of various flasher boxes and Flashing software of various brands of hands.
3. Removing virus from infected phones and Unlocking of handsets through codes and/or software.
4. Common repair procedure for Water damaged repair techniques.
5. Use of internet for troubleshooting faults using advanced troubleshooting techniques.

Reference Books

1. ChukkyOparandu , “Mobile Phones and Tablets Repairs: A Complete Guide for Beginners and Professionals”, Mondraim Nig. Ltd, May 2016..
2. SanjibPandit , “Advance Mobile Repairing: Multicolour Circuits, Service Diagrams & Repairing”, Mondraim Nig. Ltd, December 2010.

Web References

1. https://www.youtube.com/watch?v=OjxCelVySi8
2. https://www.youtube.com/watch?v=jd8zBgwMfU0
3. https://in.pinterest.com/pin/862017184895958528/
4. https://fliphtml5.com/fgms/skao/basic
5. https://www.pinterest.com/smartphonesrepair/phone-repairing-manual-pdf-free-download/

COs /POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
1	3	2	2	1	2	-	-	-	1	-	-	-	3	2	1
2	3	2	2	1	2	-	-	-	1	-	-	-	3	2	1
3	3	2	2	1	2	-	-	-	1	-	-	-	3	2	1
4	3	2	2	1	2	-	-	-	1	-	-	-	3	2	1
5	3	2	2	1	2	-	-	-	1	-	-	-	3	2	1

Correlation Level: 1-Low, 2-Medium, 3- High