

BOS meeting in department of
Electronics & Communication Engineering
(Held on 25/05/13 at 11:00 hrs onwards)

The BOS meeting of Electronics and
Communication Engg. was held on 25/05/13
at 11:00hrs onwards in the Head's office.
Following experts/members were present,

- (1) Dr. B.K. Kaushik, IIT Roorkee *Tsali*
- (2) Prof. M.M.S. Rautan, Head CSE
- (3) Prof N.S. Panwar, Head USIC
- (4) Mr. Y.P. Pundir, Assist. Prof. ECE Deptt. *Y.P.*

The committee discussed and resolved
the followings →

- (i) Panel of Experts was recommended
as in Enclosure-1 (ECE).
- (ii) Experts for Paper-setting and Project
evaluation were recommended as in
Enclosure-2 (ECE).
- (iii) Regulations/Ordinances for the B.Tech.
degree course were framed and were
decided as in Enclosure-3 (ECE).
- (iv) Syllabus and examination scheme was
decided and recommended as in

Enclosure - 4^(CECE), for the B.Tech course
in Electronics & Communication Engg.
branch.

The qualifying paper of Environment
Science would be covered in second/fourth
semester. The examination of this qualifying
paper will be held with other students of
graduates courses in the university.

Dr. B. K. Kaushik

Prof M. M. S. Rawthan

25-05-2013
Prof. N. S. Panwar

Ms. Y. P. Pundir

BOS meeting in department of
Electronics and Communication Engineering
held on 25/04/15

The BOS meeting of Electronics and
Communication Engineering was held on
25/04/15 at _____ onwards in the
Head's office.

Following experts/members were present.


- (i) Prof. Y. Singh, Deptt. of Electronics and
Communication Engineering, GIBPEC, Gihurdauri,
Pauri Garhwal
- (ii) Prof. D.S. Negi, Deptt. of Mathematics, HNB
Garhwal Central University, Srinagar Garhwal
- (iii) Prof. M.M.S. Rathan, Deptt. of Computer
Science, HNB Garhwal Central University, Srinagar
Garhwal
- (iv) Mr. Kuldip Kumar, Deptt. of Electronics &
Communication Engineering.


The following are resolved →


- (i) The committee confirmed the minutes
of BOS meeting in Electronics & Communication
Engineering Deptt., held on 25/04/15
- (ii) Panel of expert was recommended
- (iii) Experts for paper-setting and project
evaluation were recommended.
- (iv) Regulations / Ordinances for the B.Tech.
degree courses were framed and were

decided as in enclosure.

- (V) Syllabus and examination scheme was decided and recommended, as in enclosure - for the B.Tech. course in Electronics & Communication Engg. branch.


25/4/15
(Prof. Y. Singh)


25/4/15
(Prof. D.S. Negi)


(Prof. M.M.S. Rauthan)


25/4/15
(Mr. Kuldip Kumar)

Proceedings of the BoS of the Electronics and Communication Engineering
(Meeting held on 30-01-2016)

BoS

As per university notification No. Acad./2016/483, dated 25-01-2016, the Board of Studies (BoS) meeting was held in the office of the Head, Electronics and Communication Engineering Dept. at the Chauras campus of the university. Following members were present-

1. Prof. Y. Singh, ECE Dept., G.B.P. Engineering Collage, Pauri, Uttarakhand. -Member
2. Prof. D. S. Negi, Mathematics Dept. HNB Garhwal University -Member
3. Mr. Kuldeep Kumar, Senior most faculty, ECE Dept. -Member
4. Prof. M. M. S. Rauthan, Head/Dean, ECE Dept, SOET. - Convener

Prof. U. C. Naithani, Physics Department, HNGBU, Srinagar Garhwal and Prof. Vinod Kumar, Electrical Dept., IIT Roorkee could not attend the meeting.

The following agenda were discussed, elaborately worked out and resolved as stated.

Agenda item No. 1. Change of the name of the subject Professional Communication to General English.

Resolution: As per the university directions the **Professional Communication** course was renamed and syllabus modified as the name **General English**. The syllabus recommended is enclosed as **Enclosure-1**. This name and syllabus is accepted for implementation for the academic year 2015-16 and onwards. Students were already informed about the directions of the university for that changes.

Agenda item No. 2. Change of the name of the subject Environmental Sciences to Environmental Science.

Resolution: As per the university directions the **Environmental Sciences** course was renamed and syllabus modified as the name **Environmental Science**. The syllabus recommended is enclosed as **Enclosure-2**. This name and syllabus is accepted for implementation for the academic year 2015-16 and onwards. Students were already informed about the directions of the university for that changes.

Agenda item No. 3. To identify the Experts for the Selection Committee(s) for the Electronics and Communication Engineering (ECE) Department.

Resolution: The identified experts for Selection Committee(s) for the recruitment of teachers in the Electronics and Communication Engineering (ECE) Department are listed in **Enclosure-3**.

(Handwritten signatures in blue ink)

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R10
Please send the name & experts for selection committee in sealed envelope
JN
14/2

Agenda item No. 4. To list the names of paper setters/ practical examiners for the examinations of the courses of the department.


Resolution: The names of the paper setters/ practical examiners for the examination of the courses of the department are as listed in **Enclosure-4**.


Agenda item No. 5. Change of the credits for the **Major Project (SET/EC/BT/C811)** from 7 credits to 6 credits and credits for the **Advanced Communication lab (SET/EC/BT/C809)** from 1 credit to 2 credits.

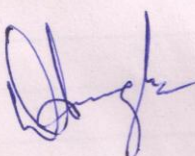
Resolution: There are some modifications in credits count in two subjects of 8th semester and these modifications are as follows the credits for the **Major Project (SET/EC/BT/C811)** from 7 credits to 6 credits and credits for the **Advanced Communication lab (SET/EC/BT/C809)** from 1 credit to 2 credits. Now the total hours for these courses changed i.e. for the **Major Project (SET/EC/BT/C811)** from 14 hrs to 12 hrs and for the **Advanced Communication lab (SET/EC/BT/C809)** from 2 hrs to 4 hrs.. But the total credits count for 8th semester will remain unchanged i.e. total credits 21. The modification of credits as recommended is enclosed in **Enclosure-5**.


The meeting was concluded with vote of thanks to the chair.

The item wise resolutions are being recommended for the kind consideration and approval of the Academics Council.


(Prof. M. M. S. Rauthan)


(Dr. Y. Singh)


(Prof. D.S. Negi)


(Kuldip Kumar)

Approved as per rules & as per
Dr
2/2

Proceedings of the BoS of the Electronics and Communication Engineering

(Meeting held on 05-04-2018)

As per university notification No.: Acad/2018/71....., the Board of Studies (BoS) meeting was held in the office of the Head, Electronics and Communication Engineering Department at the Chauras campus of the university. Following members were present-

1. Prof. Y.Singh, ECE Dept.,GBPIET, Pauri Garhwal	Member
2. Dr. P.K.Pal, ECE Dept.,NIT Srinagar Garhwal	Member
3. Prof. S. C. Bhatt, Physics Dept., HNB Garhwal University	Member
4.Prof.Y.S.Farswan,Dept. of History and Archaeology	Member
5.Mr. A.S.Bahuguna, ECE Dept., HNB Garhwal University	Member
6. Mr. Kuldip Kumar,ECE Dept., HNB Garhwal University	Convener

The following agenda were discussed, elaborated and worked out and resolved as stated.

Agenda item No. 1. To identify the Experts for the Selection Committee(s) for the Electronics and Communication Engineering Department.

Resolution: The identified experts for Selection Committee(s) for the recruitment of Electronics and Communication Engineering Department teachers are listed in **Enclosure-1 (Envelop-1)**.

Agenda item No. 2. To list the names of paper setters/ practical examiners for the examinations of the courses of the department.

Resolution: The names of the paper setters/ practical examiners for the examination of the courses of the department are as listed in **Enclosure-2 (Envelop-2)**.


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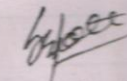
Agenda item No. 3. To update the syllabus for B. Tech. (Electronics and Communication Engineering) course.


Resolution: Syllabus for B. Tech. (Electronics and Communication Engineering) course was discussed deliberately and Updated as **Enclosure-3**.

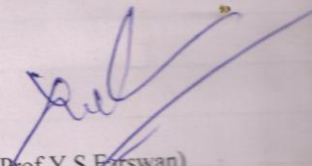
The meeting was concluded with vote of thanks to the chair.


The item wise resolutions are being recommended for the kind consideration and approval of the School Board/Academics Council.

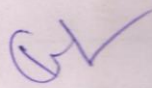

(Prof. Y. Singh)


(Prof. S.C. Bhatt)



(Dr. P.K. Pal)


(Prof. Y.S. Farswan)

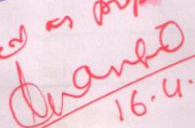

(A.S. Bahuguna)


(Kuldip Kumar)

For approval of
Member of Board

 16/7

Humble ve

Approved as proposed

16.4.2018

Proceedings of Meeting of Board of Studies of the Dept. of Electronics and Communication Engineering held on 26-02-2019

As per university notification No. **ACAD/2019/357**, the Board of Studies (BoS) meeting was held in office of the Head, Dept. of Electronics and Communication Engineering at Chauras Campus. Following members were present:-

1. Prof. S.C. Bhatt, Department of Physics, HNB Garhwal University, Srinagar (Garhwal).
2. Prof. Y. S. Farswan, Department of History & Archaeology, HNB Garhwal University, Srinagar (Garhwal).
3. Mr. Kuldip Kumar, Assistant Professor, Department of Electronics and Communication Engineering, HNBGU, Srinagar (Garhwal).
4. Y. P. Pundir, Head, Department of Electronics and Communication Engineering, HNBGU, Srinagar (Garhwal).

However, BoS Members Prof. Y. Singh (ECE Dept. GBPEC, Ghurdauri, Pauri) and Dr. Pankaj K. Pal (Electronics Engg. Dept., NIT Uttarakhand) could not attend the meeting.

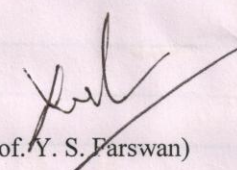
The following agenda was discussed, elaborately worked out and resolved as stated below.


Agenda Item No. 1. To update intake capacity and seat distribution for admission to first semester of B. Tech. in Electronics and Communication Engineering (ECE) course/ program after providing reservation for Economic Weaker Section (EWS) as per MHRD vide letter F. No. 19-3/2019-CU.Cdn dated 18-01-2019, and university letter no. , HNBGU/ DSW/2019 dated 04/02/2019.

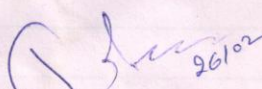
Resolution: The total number of seats and the new seat distribution was calculated and updated as in Enclosure-1.

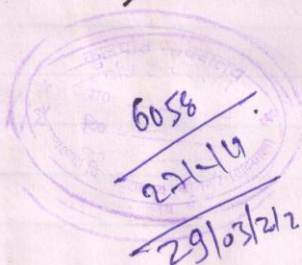
The meeting was concluded.

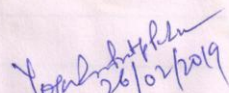
The item wise resolution is being recommended for the kind consideration and approval of the academics council.


(Prof. Y. S. Farswan)


(Prof. S. C. Bhatt)


(Mr. Kuldip Kumar)

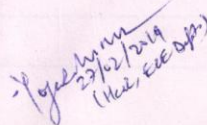

6058
27/2/19
29/03/22


(Y. P. Pundir)
Yogendra Pratap Pundir
Asst. Professor & HOD
Dept. of Electronics and
Communication Engineering

JR Academics
Approved
1.3.2019

Hon'ble Vice - Chancellor

May kindly approve


(Y. P. Pundir)
(Head, ECE Dept.)

- A. Calculation of new total student intake to implement Reservation for the Economic Weaker Section (EWS) for admission to the First Semester of B. Tech. in Electronics and Communication Engineering (ECE) course/ program.

- I. Existing seat distribution for admission to 1st Semester of B. Tech. (ECE) in current academic session (2018-19):

Existing intake (number of seats) in B. Tech. (ECE)				
Unreserved (UR)	Scheduled Caste (SC)	Scheduled Tribes (ST)	Other Backward Class (OBC)	Total
19	6	3	10	38

- II. For admission to B. Tech. (ECE) first semester during next 2019-20 session, 5% EWS reservation is to be implemented. After implementing 5% reservation for EWS the unreserved seats change from 50.5% of existing total to 45.5 % of new total, while the actual number of seats in unreserved category to remain unchanged i.e. Nineteen (19) only. Therefore, the new total number of seats is calculated as following:

New total number of seats = Existing total seats \times 50.5 / 45.5

$$= 38 \times 50.5 / 45.5 = 43$$

(Decimals being rounded off to nearest larger integer).

So, the new total number of seats for admissions in B. Tech. (ECE) first semester for 2019-20 session is calculated to be 43 (Forty Three only).

- III. For admission to B. Tech. (ECE) first semester from 2020-21 session onwards, total 10% EWS reservation is to be implemented. After implementing 10% reservation for EWS the unreserved seats change from 50.5% of existing total to 40.5 % of new total, while the actual number of seats in unreserved category to remain unchanged i.e. Nineteen (19) only. Therefore, the new total number of seats is calculated as following:

New total number of seats = Existing total seats \times 50.5 / 40.5

$$= 38 \times 50.5 / 40.5 = 48$$

(Decimals being rounded off to nearest larger integer).

So, the new total number of seats for admissions in B. Tech. (ECE) first semester from 2020-21 session onwards is calculated to be 48 (Forty Eight only).

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 26/02/2019


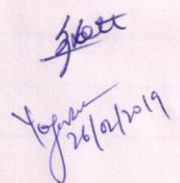

B. Calculation of new seat distribution among different categories after implementing Reservation for the Economic Weaker Section (EWS) for admission to the First Semester of B. Tech. in Electronics and Communication Engineering (ECE) course/ program.

- I.** For, academic session 2019-20, the new distribution of seats has 45.5% for unreserved category, 5% seats for EWS. 15% for SC, 7.5% ST and 27% OBC category. The seats in each category are calculated as in following table:

Seat Distribution (for 2019-20 session with Total number of seats = 43)			
Category	Calculation	Number of Seats	Remarks
Unreserved	$43 \times 45.5/100 = 19.565$	19	Rounded to be same as in existing seat distribution i.e. before applying EWS.
SC	$43 \times 15/100 = 6.45$	6	Rounded to closest integer.
ST	$43 \times 7.5/100 = 3.225$	3	Rounded to closest integer.
OBC	$43 \times 27/100 = 11.61$	12	Rounded to closest integer.
EWS	$43 \times 5/100 = 2.15$	3	Rounded to integer while making total equal to 43.

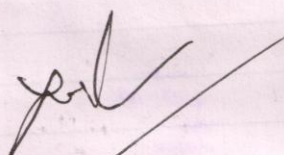
- II.** For, academic session 2020-21 onwards, the new distribution of seats has 40.5% for unreserved category, 10% seats for EWS. 15% for SC, 7.5% ST and 27% OBC category. The seats in each category are calculated as in following table:


Seat Distribution (for 2020-21 session onwards with Total number of seats = 48)			
Category	Calculation	Number of Seats	Remarks
Unreserved	$48 \times 40.5/100 = 19.44$	19	Rounded to be same as in existing seat distribution i.e. before applying EWS.
SC	$48 \times 15/100 = 7.2$	7	Rounded to closest integer.
ST	$48 \times 7.5/100 = 3.6$	4	Rounded to closest integer.
OBC	$48 \times 27/100 = 12.96$	13	Rounded to closest integer.
EWS	$48 \times 10/100 = 4.8$	5	Rounded to closest integer.

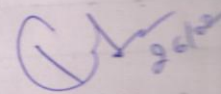




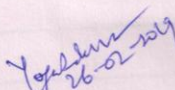
C. Summary of Category-wise Seat Distribution for admission to the First Semester of B. Tech. in Electronics and Communication Engineering (ECE) course/ program:

Category	Existing Intake Capacity (Session 2018-19)	Intake capacity after implementing EWS	
		Session 2019-20 (with 5% EWS)	Session 2020-21 onwards (with 10% EWS)
UR	19	19	19
SC	6	6	7
ST	3	3	4
OBC	10	12	13
EWS	--	3	5
Total	38	43	48

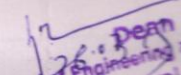

(Prof. Y. S. Earswan)

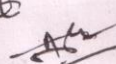

(Prof. S. C. Bhatt)

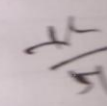

(Mr. Kuldip Kumar)


(Y. P. Pundir)


Yogendra Pratap Pundir
Asstt. Professor & HOD
Dept. of Electronics and
Communication Engineering



Dean
School of Engineering and Technology
J.M.B. Garhwal University
(A Central University)
Srinagar (Garhwal)

~~For approval~~


Pl. Process first Dean


R/D

For approval



Approved
30.3.2017

Proceedings of Meeting of Board of Studies of the Dept. of Electronics and Communication Engineering held on 09-09-2019

As per university notification No. Academic/2019/975, the Board of Studies (BoS) meeting was held in office of the Head, Dept. of Electronics and Communication Engineering at Chauras Campus. Following members were present:-

1. Prof. Y. Singh, Dept. of Electronics and Communication Engineering, GBPIET, Ghurdauri, Pauri Garhwal, Uttarakhand.
2. Prof. R. C. Dimri, Department of Mathematics, HNB Garhwal University, Srinagar (Garhwal).
3. Prof. D. S. Negi, Department of Mathematics, HNB Garhwal University, Srinagar (Garhwal).
4. Mr. Arun S. Bahuguna, Assistant Professor, Department of Electronics and Communication Engineering, HNBGU, Srinagar (Garhwal).
5. Y. P. Pundir, Head, Department of Electronics and Communication Engineering, HNBGU, Srinagar (Garhwal).

However, BoS Member Dr. Pankaj K. Pal (Electronics Engg. Dept., NIT Uttarakhand) could not attend the meeting. The following agenda was discussed, elaborately worked out and resolved as stated below.

Agenda Item No. 1. To decide and recommend Course objectives, Program Outcomes and Program Specific Outcomes for B. Tech. (ECE).

Resolution: The Course Objectives, Program Outcomes and Program Specific Outcomes for B. Tech. (ECE) are discussed and prepared as enclosed in enclosure-1.

Agenda Item No. 2. To identify and recommend experts for nomination in various committee(s) of Electronics and Communication Engineering.


Resolution: The experts for nomination to various committee(s) of Electronics and Communication Engineering are identified and listed in enclosure-2 (Envelop-1)

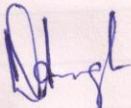
Agenda Item No. 3. To discuss the relevant suggestions on curriculum as obtained in feedback by students.


Resolution: Feedback received from students was discussed. It is decided that the curriculum does not need any modifications.


The meeting was concluded.

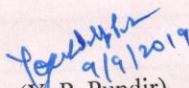
The item wise resolution is being recommended for the kind consideration and approval of the academics council.


(Prof. Y. Singh)


(Prof. D. S. Negi)


(Prof. R. C. Dimri)


(Mr. A. S. Bahuguna)


(Y. P. Pundir)

Re-examine
12/9/19
SO(Academic)

Name of Programme: Bachelor of Technology (B. Tech.) in Electronics and Communication Engineering (ECE)

A. Programme Outcomes (POs):

- 1. Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex Electronics and Communication engineering problems.
- 2. Problem Analysis:** Identify, formulate, research literature, and analyze complex Electronics and Communication engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of Solutions:** Design solutions for complex Electronics and Communication engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern Tool usage:** Create, select, and apply appropriate techniques, resources, and modern Electronics and Communication engineering and IT tools including prediction and modeling to complex Electronics and Communication engineering activities with an understanding of the limitations.
- 6. The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Electronics and Communication engineering practice.
- 7. Environment and Sustainability:** Understand the impact of the professional Electronics and Communication engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the Electronics and Communication engineering practice.
- 9. Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively on complex Electronics and Communication engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project Management and Finance:** Demonstrate knowledge and understanding of the Electronics and Communication engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Page 1 of 10

B. Programme Specific Outcomes (PSOs) of B. Tech. (ECE):

After completion of B. Tech. (ECE) degree programme a students will have

1. Ability to design and develop Integrated Circuits.
2. Ability to design and develop Electronic Products.
3. Ability to design and develop Communication Systems.

C. Course outcomes for Core and Elective Courses

Semester -I, II			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C104	Basic Electronics	Student should be able to: 1. Understand the working and current voltage characteristics of semiconductor devices. 2. Perform dc analysis of amplifier circuits. 3. Design basic OP AMP circuits. 4. Understand and use basic digital electronic concepts.

Semester -III			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C302	Electronic Devices and Circuits	Student should be able to: 1. Understand the working and current voltage characteristics of semiconductor devices. 2. Perform dc and ac analysis of amplifier circuits. 3. Design amplifiers and oscillator circuits. 4. Understand and work around with different performance metrics of amplifier circuits.
2	SET/EC/BT/C303	Digital Electronics	Student should be able to: 1. Analyze and design digital circuits. 2. Understand working and usage of logic families. 3. Implement digital circuits using gates, ICs, and programmable logics. 4. Understand and use different types of digital memories.

Page 2 of 10

3	SET/EC/BT/C304	Computer Architecture	Student should be able to: 1. Understand, analyze and design internal components of a digital computer. 2. Understand, analyze and implement different algorithms for binary arithmetic. 3. Specify a computer in Register Transfer Language. 4. Analyze performance of computer and its dependence on various components. 5. Design and implement different digital circuits and computer using VHDL.
4	SET/EI/BT/C305	Signals and Systems	Student should be able to: 1. Understand and specify different types of signals and systems. 2. Understand, analyze and transform different signals-systems in time and frequency domains. 3. Apply properties of Fourier /Laplace/ Z Transforms to electronic systems. 4. Understand different steps in Analog-to-Digital signal conversion.
5	SET/EC/BT/C306	Electronic Measurements and Instruments	Student should be able to: 1. Understand working and correct usage of different electronic measurement instruments. 2. Understand and estimate errors in measurement. 3. Set up experiments for electronic measurements. 4. Interface different transducers for Data acquisition.
6	SET/MC/BT/M311	Indian Constitution	Student should be able to: 1. To understand history and sources of Indian Constitution. 2. To understand features of Indian Constitution. 3. To understand structure of polity and administration at union, state and local levels. 4. To understand role and functioning of Election Commission and different bodies or institutions for welfare of SC, ST, OBC and Women.

Semester -IV			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C401	Analog Communication	Student should be able to: 1. Understand different modulation schemes used in analog communication. . 2. Understand issue of noise in communication systems. 3. Understand signal generation/ detection techniques used in different modulation schemes. 4. Understand working different transmitter and receiver circuits.
2	SET/EC/BT/C402	Analog Integrated Circuits	Student should be able to: 1. Understand and analyse different circuit blocks used in an OP AMP. 2. Understand different specifications and data sheets of an OP AMP. 3. Design application circuits using OP AMP.

Page 3 of 10

			4. Use 555 IC for different timing applications.
3	SET/EI/BT/C403	Microprocessors and Microcontrollers	Student should be able to: 1. Understand and program 8085 microprocessor. 2. Understand and program 8051 microcontroller. 3. Interface different type of peripheral devices. 4. Understand and program for communication with peripherals.
4	SET/EC/BT/C404	VLSI Devices and Technology	Student should be able to: 1. Understand physics of semiconductor devices. 2. Understand working and models of different semiconductor devices. 3. Understand techniques used in fabrication of semiconductor devices. . 4. Understand different issues faced by modern semiconductor devices.
5	SET/EC/BT/C405	Electromagnetic Field Theory	Student should be able to: 1. Understand and analyze behaviour of static electric or magnetic field. 2. Understand and solve Maxwell's equations. 3. Understand electromagnetic field and related material properties in electronic systems. 4. Understand electromagnetic wave propagation and power flow in a medium.
6	SET/EI/BT/C406	Circuit Theory	Student should be able to: 1. Apply network theorems for solving complex circuit networks. 2. Apply concepts of Graphs to solve electric circuits. 3. Model and Analyze circuits in time/ frequency domain. 4. Use concept of two port networks and conversion of different parameters. 5. Synthesize different networks and analyse for stability.
7	SET/MC/BT/M411	Essence of Indian Traditional Knowledge	Student should be able to: 1. Understand traditional practices related to medicinal plants in Indian Society 2. Understand phenomenon of urbanisation and its impact on society. 3. Understand issue of Gender Inequality. 4. Understand India's heritage and cultural aspects.

Semester -V			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C501	Digital Communication	Student should be able to: 1. Understand the basics of information theory, source coding techniques and calculate Entropy Of source. 2. Describe and determine the performance of line codes and methods to mitigate inter symbol Interference.

Page 4 of 10

			3. Learn the generation and detection of base band system. 4. Understand the generation, detection signal space diagram, spectrum, bandwidth efficiency, and probability of error analysis of different band pass modulation techniques. 5. Describe and determine the performance of different error control coding schemes for the Reliable transmission of digital representation of signals and information over the channel.
2	SET/IN/BT/C502	Control Systems	Student should be able to: 1. Understand feedback mechanisms and their impact on system performance. 2. Determine time domain and frequency domain performance metrics. 3. Design and analyze a system from frequency domain perspective. 4. Determine and enhance stability property of a control system.
3	SET/EC/BT/C503	CMOS Digital VLSI Design	Student should be able to: 1. Understand working of static and dynamic CMOS logic circuits. 2. Design a CMOS circuit of given functionality and requirements. 3. Understand timing and power dissipation issues in digital circuits. 4. Understand and design Data-path subsystems. 5. Understand and design different type of digital memory.
4	SET/EC/BT/C504	Microwave Theory and Techniques	Student should be able to: 1. Understand the working of basic microwave components 2. Understand the theory of microwave amplifiers and oscillators 3. Design waveguides and resonators 4. Understand the basic working principle of ferrites in microwave devices 5. Proficient in analysis and characterization of microwave networks 6. Understand the use of microwave devices in real time scenarios.
5	SET/SH/BT/H510	Foundations of Yoga	Student should be able to: 1. To understand psychological and physiological aspects Yoga and its role in health. 2. To understand historical and other multidisciplinary aspects of Yoga. 3. To understand relevance of related ancient texts in modern time.
6	SET/EC/BT/E511	Power Electronics	Student should be able to: 1. Understand operation of different types of power electronic devices. 2. Understand different triggering methods. 3. Understand working of different type of converters used in power electronic circuits. 4. Understand working of different type of inverters used in power electronic circuits.
7	SET/EC/BT/E512	Speech and Audio Processing	Student should be able to: 1. To understand mathematical model for speech and audio signal processing. 2. To apply different mathematical transform methods to speech and audio signals. 3. To analyse and modify signals in frequency domain. 4. To understand engineering problems related to speech signals.
8	SET/EC/BT/E513	Nano Electronics	Student should be able to: 1. Understand various aspects of nano-technology and the processes involved in making nano Components and material.

Page 5 of 10

			2. Leverage advantages of the nano-materials and appropriate use in solving practical problems. 3. Understand various aspects of nano-technology and the processes involved in making nano Components and material. 4. Leverage advantages of the nano-materials and appropriate use in solving practical problems.
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Semester -VI			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C601	Digital Signal Processing	Student should be able to: 1. Interpret, represent and process discrete/digital signals and systems. 2. Understand frequency domain analysis of discrete time signals. 3. Ability to design & analyze DSP systems like FIR and IIR Filter etc. 4. Grasp practical implementation issues such as computational complexity, hardware resource limitations as well as cost of DSP systems.
2	SET/EC/BT/C602	Data Communication and Networking	Student should be able to: 1. Explain the functions of the different layer of the OSI Protocol. 2. Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block. 3. For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component 4. For a given problem related TCP/IP protocol developed the network programming. 5. Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.
3	SET/EC/BT/C603	Antenna and Wave Propagation	Student should be able to: 1. Develop an understanding of the design features of various Antenna Types and their families. 2. Understand the fundamentals and modes of wave propagation. 3. Differentiate and deploy Broadband and Narrowband Antennas with characteristic radiation patterns. 4. Use mathematical analysis and tools to simulate Antenna signals for transmission and reception. 5. Quantify the fields radiated by various types of antenna. 6. Plot the characteristics of wire and aperture antennas. 7. Understand the significance of Micro-Strip antennas, methods of analysis and configurations.
4	SET/EC/BT/C604	Telecommunication Switching	Student should be able to: 1. Understand the concepts of networking thoroughly.

Page 6 of 10

			2. Design a network for a particular application. 3. Analyze the performance of the network.
5	SET/SH/BI/A609	Biology	1. Describe how biological observations of 18th Century that lead to major discoveries. 2. Convey that classification <i>per se</i> is not what biology is all about but highlight the underlying criteria, such as morphological, biochemical and ecological 3. Highlight the concepts of recessive-ness and dominance during the passage of genetic material from parent to offspring 4. Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine 5. Classify enzymes and distinguish between different mechanisms of enzyme action. 6. Identify DNA as a genetic material in the molecular basis of information transfer. 7. Analyse biological processes at the reductionist level 8. Apply thermodynamic principles to biological systems. 9. Identify and classify microorganisms.
6	SET/EC/BI/E611	CMOS Analog IC Design	Student should be able to: 1. To understand working of MOSFETs and different related effects such as parasitic etc. 2. To analyse and design different amplifiers, current mirror and band gap reference circuits Using MOSFETs. 3. To design an OPAMP building blocks for given specification. 4. To analyze and modify frequency response of analog circuits.
7	SET/EC/BI/E612	Information Theory and Coding	Student should be able to: 1. Understand the concept of information and entropy. 2. Understand Shannon's theorem for coding. 3. Calculation of channel capacity. 4. Apply coding techniques.
8	SET/EC/BI/C613	Bio-Medical Electronics	Student should be able to: 1. Understand the application of the electronic systems in biological and medical applications. 2. Understand the practical limitations on the electronic components while handling bio Substances. 3. Understand and analyze the biological processes like other electronic processes. 4. Understand working and design of different sensing and imaging techniques used in medical Electronic systems.

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Page 7 of 10

Semester -VII			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BI/C701	Advance Communication Systems	Student should be able to: 1. Explain the basic of optical communication. 2. Explain the basics of Radar System, types of RADARs, and range calculation. 3. Understand the working principle of satellite communication , Orbital distance calculation , LNA and link budget. 4. Explain the working of both monochrome and colour Television, generation of video signal And its display. 5. Understand and differentiate among LCDs, LEDS and OLED displays.
2	SET/HS/BI/H710	Principles of Management	Student should be able to: 1. Understand need and types of management. 2. Use management techniques in personal and professional lives. 3. Do financial planning. 4. Learn skills needed for entrepreneurship.
3	SET/EC/BI/E711	Optical Fiber Communication	Student should be able to: 1. Distinguish Step Index, Graded index fibers and compute mode volume. 2. Explain the Transmission Characteristics of fiber and Manufacturing techniques of fiber/cable. 3. Classify the construction and characteristics of optical sources and detectors. 4. Discuss splicing techniques, passive optical components and explain noise in optical system. 5. Design short haul and long haul Analog/ Digital optical communication systems.
4	SET/EC/BI/E712	Embedded Systems	Student should be able to: 1. Suggest design approach using advanced controllers to real-life situations. 2. Design interfacing of the systems with other data handling / processing systems. 3. Appreciate engineering constraints like energy dissipation, data exchange speeds etc. 4. Develop a working product from given technical specifications.
5	SET/EC/BI/E713	Adaptive Signal Processing	Student should be able to: 1. Understand the non-linear control and the need and significance of changing the control Parameters w. r. t. real-time situation. 2. Mathematically represent the adaptability requirement. 3. Understand the mathematical treatment for the modelling. 4. Design of the signal processing systems.
6	SET/EC/BI/E714	Wireless Sensor Networks	Student should be able to: 1. Design wireless sensor networks for a given application 2. Understand emerging research areas in the field of sensor networks 3. Understand MAC protocols used for different communication standards used in WSN 4. Explore new protocols for WSN.

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Page 8 of 10

7	SET/EC/BT/E715	High Speed Electronics	Student should be able to: 1. Understand significance and the areas of application of high-speed electronics circuits. 2. Understand the properties of various components used in high speed electronics 3. Design High-speed electronic system using appropriate components. 4. Use PCB techniques for high speed PCBs and circuits.
8	SET/EC/BT/E716	Error Correcting Codes	Student should be able to: 1. Understand the error sources. 2. Understand error control coding applied in digital communication. 3. Understand and compare different algorithms used in error control. 4. Implement different algorithms used in error control.

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Semester -VIII			
S. No.	Course Code	Course Name	Course Outcomes
1	SET/EC/BT/C801	Mobile Communication and Networks	Student should be able to: 1. Understand the working principles of the mobile communication systems. 2. Understand the relation between the user features and underlying technology. 3. Analyze mobile communication systems for improved performance. 4. Understand features, specifications and limitations of wireless communication standards.
2	SET/EC/BT/E811	Radar Guidance And Navigation	Student should be able to: 1. Explain radar and radar range equation. 2. Explain the principles, concepts and operation of radar system. 3. Understand CW, FMCW, MTI and tracking radar systems. 4. Understand different types of radar based guidance technique.
3	SET/EC/BT/E812	Satellite Communication	Student should be able to: 1. Explain the principles, concepts and operation of satellite communication. 2. Explain the concepts and operation of telemetry and command control for satellite communication. 3. Describe the concepts of signal propagation affects, link design, rain fading and link availability and perform interference calculations. 4. Understand different multiple access techniques.
4	SET/EC/BT/E813	Advance Semiconductor Devices	Student should be able to: 1. Explain the physics of semiconductor devices like Diodes, MESFET devices etc. 2. Explain the characteristics and working principle of various types of Diodes. 3. Understand the working principle, characteristic, biasing of different microwave and

Page 9 of 10

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5	SET/EC/BT/E814	Digital Image and Video Processing	Optoelectronic devices. 4. Understand challenges of short channel effects and methods to deal with such effects. Student should be able to: 1. Mathematically represent the various types of images and analyze them. 2. Process these images for the enhancement of certain properties or for resource optimization. 3. Understand algorithms for image compression and coding. 4. Understand video coding and different video codec standards.
6	SET/EC/BT/E815	Mixed Signal Design	Student should be able to: 1. Understand the practical situations where mixed signal analysis is required. 2. Analyze and handle the inter-conversions between signals. 3. Understand operation and design procedure for Filter circuits, DACs, ADCs and PLL etc. 4. Understand and use different signaling and layout techniques used for mixed signal systems.
7	SET/EC/BT/E816	Scientific Computing	Student should be able to: 1. Understand the significance of computing methods, their strengths and application areas. 2. Perform the computations on various data using appropriate computation tools. 3. Understand and implement algorithms related to FFT, Random Signal Processing. 4. Understand impact of approximations and estimate errors in computation.

The board recommends above Course Objectives, Program Outcomes and Program Specific Outcomes for B. Tech. (ECE).

Signature
(Prof. Y. Singh)

Signature
(Prof. D. S. Negi)

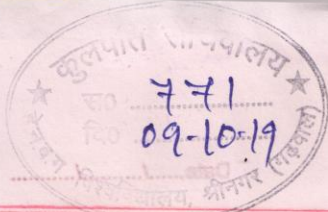
Signature
(Prof. R. C. Dimri)

Signature
(Mr. Arun S. Bahuguna)

Signature
9/9/2019
(Yogendra. P. Pundir)

Pl. examine.
Kailash
17/9/19
So (Academics)
K. Kalaji
11/9/19

Page 10 of 10



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Date...../...../.....

पाठ्यक्रम समिति इलेक्ट्रॉनिक्स 2003 कम्प्यूटिंग, इन्जिनियरिंग के वेब में उपास्थित सदस्यों की सहयोग के आधार पर माननीय कुलपति जी के अनुमोदन नाम प्रस्तुत।

DR(A)

23/9/19
SD(Acad)

DR(A)

Pl. Specify the agenda/resolution points that needs to be placed before SB. Also, pl. Specify the points that needs to be approved by Hon'ble VC.

24/9/19

SD(Academic)

IX) पाठ्यक्रम समिति के उपास्थित सदस्यों द्वारा कि सव 1 से 03 तक के निर्दिष्ट मामों में सम्मिलित है।
अतः अनुमोदनात्मक प्रस्तुत।

24/9/19

24/9/19
SD(Acad)

DR(A)

CA may pl. approve 'X'. MOD, Dept. of ECE may pl. ensure to put up relevant agenda before School Board, if any out of prepared agenda.

27/9/19

Registrar - o/c
Hon'ble VC

X) Approved as proposed
10.10.2019

UPCP

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Student should be able to: High Speed Electronics SET/EC/BT/E715