Minutes of Meeting of online BOS meeting held on 17.08.2020

As per the 6th academic council of HBTU Kanpur the course structure of the B.Tech and M.Tech programs have been revised and according to the approved course structure, we have submitted (through email dated Aug.13, 2020 at 6.49pm) the Proposals of Syllabus for the programs: Bachelor of Technology in Electronics Engineering and Master of Technology in Electronics and Communication Engineering (As per the Ordinances for Bachelor of Technology & Ordinances for Master of Technology as per 6th Academic Council) **attached as: Final agenda for BOS along with the report of Academic Audits and NBA for kind information please.**

For the said purposes the online BOS meeting was held on 17.08.2020 from 11.00 am.

1. Followings were present in the meeting

S.no.	Name	Designation
1.	Dr. Krishna Raj	Professor & Head, ETD
2.	Prof. Kumar Vaibhav Srivastava, Dept of Electrical Engineering IIT Kanpur	BOS Member
3.	Prof. Y. N. Singh, Dept of Electrical Engineering IIT Kanpur	BOS Member
4.	Sri Alok Dixit, Scientist F, SMG, DMSRDE Kanpur	BOS Member
5.	Sri Manoj Kumar Tiwari, Staff Engineer, ST Microelectronics Pvt. Ltd. Plot no. 01, Knowledge Park 3, Greater Noida , UP-201308	BOS Member
6.	Sri Himanshu Baskey, DMSRDE Kanpur	Special Invitee
7.	Prof. Rachna Asthana, Director AITH Kanpur	Special Invitee
8.	Dr. Manoj Kumar Shukla	Professor
9.	Mrs. Rajani Bisht	Associate Professor
10.	Dr. A K Shankhwar	Associate Professor
11.	Dr. Ashutosh Singh	Associate Professor
12.	Dr. Manish Kumar Singh	Assistant Professor
13.	Dr. Suman Kumar Mitra	Assistant Professor
14.	Mr. Partha Saha	Assistant Professor

15.	Mr. Dharmendra Kumar Singh	Assistant Professor
16.	Ms. Nayanica Srivastava	Assistant Professor
17.	Dr. Preeti Agarwal Mittal	Guest Faculty
18.	Dr. Kumar Gaurav	Guest Faculty
19.	Mr. Deo Chand Jaiswal	Guest Faculty

2. Course structure of B. Tech. ET program according to 6th Academic Council:

Structure of the Curriculum
Semester Wise Course Structure & Evaluation Scheme
For B. Tech. in Electronics Engineering
(Effective from Session 2020-21 for New Entrants: As per the 6th Academic Council)

I Semester

BSC: Basic Science Course
MC: Mandatory Courses
PCC: Program Core Course
HSMC: Hum. Social Sc. and Management Courses
PEC: Program Elective Course
OEC: Open Elective Course
ESC: Engineering Science Course

Sl. No.	Course Type	Subject Code	Course Title	Credits (LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Physics	4(3-0-2)	15	20	15	50	50	100
2.	BSC		Mathematics-I	4(3-1-0)	30	20	-	50	50	100
3.	ESC		Electrical Engineering	4(3-0-2)	15	20	15	50	50	100
4.	ESC		Engineering Mechanics	3(3-0-0)	30	20	-	50	50	100
5.	HSMC		Professional Communication	3(2-0-2)	15	20	15	50	50	100
6.	HSMC		English Language and Composition	2(2-0-0)	30	20	-	50	50	100
			Total Credits	**20**						

II Semester

Sl. No.	Course Type	Subject Code	Course Title	Credits (LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Engineering Chemistry	4(3-0-2)	15	20	15	50	50	100
2.	BSC		Mathematics -II	4(3-1-0)	30	20	-	50	50	100
3.	ESC		Electronics &	3(3-0-	30	20	-	50	50	100

			Instrumentation Engineering	0)						
4.	ESC		Engineering Graphics	3(0-0-6)	30	20	-	50	50	100
5.	ESC		Computer Concept &C Programming	4(3-0-2)	15	20	15	50	50	100
6.	ESC		Workshop Practice	2(0-0-4)	-	20	30	50	50	100
7.	MC Non Credit		Environment and Ecology	2(2-0-0)	30	20	-	50	50	100
			Total Credits	**20**						

III Semester

Sr. No	**Course Type**	**Subject code**	**Course title**	**Credits**	**Sessional Marks**				**ESM**	**Total Marks**
					MSE	**TA**	**Lab**	**Total**		
1	BSC		Mathematics-III	4(3-1-0)	30	20	-	50	50	100
2	ESC		Electrical Circuit Analysis	5(3-1-2)	15	20	15	50	50	100
3	PCC		Digital Electronics	4(3-0-2)	15	20	15	50	50	100
4	PCC		Solid State Devices	4(2-1-2)	15	20	15	50	50	100
5	PCC		Hardware Description Language	2(2-0-0)	30	20	-	50	50	100
6	HSMC		Engineering Economics and Management	3(3-0-0)	30	20	-	50	50	100
7	MC (Non-credit)		Indian Constitution	2(2-0-0)	30	20	-	50	50	100
Total Credits				22						

IV Semester

Sr. No	**Course Type**	**Subject code**	**Course title**	**Credits**	**Sessional Marks**				**ESM**	**Total Marks**
					MSE	**TA**	**Lab**	**Total**		
1.	BSC		CONM	4(3-1-0)	30	20	-	50	50	100
2.	ESC		Data Structure Using C	5(3-1-2)	15	20	15	50	50	100
3.	PCC		Signal and Systems	3(2-1-0)	30	20	-	50	50	100
4.	PCC		Analog Circuits	4(2-1-2)	15	20	15	50	50	100

5.	PCC		Electromagnetic Field Theory	3(2-1-0)	30	20	-	50	50	100
6.	HSMC		Organizational Behaviour	3(3-0-0)	30	20	-	50	50	100
7.	MC (Non-credit)		Cyber Security	2(2-0-0)	30	20	-	50	50	100
Total Credits				22						

V Semester

Sr. No.	Course Type	Subject code	Course title	Credits	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1	PCC		Analog Integrated Circuits	4(2-1-2)	15	20	15	50	50	100
2	PCC		Analog Communication	5(3-1-2)	15	20	15	50	50	100
3	PCC		Antenna and Wave Propagation	3(2-1-0)	30	20	-	50	50	100
4	PCC		Microprocessors & Microcontroller	4(2-1-2)	15	20	15	50	50	100
5	PCC		VLSI Technology	3(2-1-0)	30	20	-	50	50	100
6	OEC (Maths)		Operation Research	3(3-0-0)	30	20	-	50	50	100
Total Credit				**22**						

VI Semester

Sr. No.	Course Type	Subject code	Course title	Credits	Sessional Marks				ESE TA	Total Marks
					MSE	TA	Lab	MSE		
1	PCC		Optical Communication	4(2-1-2)*	15	20	15	50	50	100
2	PCC		VLSI Design	3(2-0-2)	15	20	15	50	50	100
3	PCC		Advanced Instrumentation	3(2-1-0)	30	20	-	50	50	100
4	PCC		Digital Communication	3(2-0-2)#	15	20	15	50	50	100
5	PCC		Control System	3(2-1-0)	30	20	-	50	50	100
6	PCC		Machine Learning	3(3-0-0)	30	20	-	50	50	100
7	OEC (Humanities)		OEC (Humanities)	3(3-0-0)	30	20	-	50	50	100
Total Credit				**22**						

*as per the recommendation of BoS, Lab component is introduced in the syllabus and the credit distribution is changes from C(L-T-P) : 4(3-1-0) to C(L-T-P) : 4(2-1-2)

as per the recommendation of BoS, Lab component is introduced in the syllabus and the credit distribution is changes from C(L-T-P) : 3(2-1-0) to C(L-T-P) : 3(2-0-2)

VII Semester

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PCC		Digital Signal Processing	3(2-0-2)	15	20	15	50	50	100
2.	PCC		VLSI Implementation Of Digital Signal Processing Algorithms	2(2-0-0)	30	20	-	50	50	100
3.	PEC		PEC-I	3(3-0-0)	30	20	-	50	50	100
4.	PEC		PEC-II	3(3-0-0)	30	20	-	50	50	100
5.	OEC		OEC-I	3(3-0-0)	30	20	-	50	50	100
6.	Industrial Training		Industrial Training	2(0-0-4)	-	50	-	50	50	100
7.	Seminar		Seminar	2(0-0-4)	-	50	-	50	50	100
8.	Project		Project	4(0-0-8)	-	50	-	50	50	100
				22						

VIII Semester

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC		PEC-III	4(3-1-0)	30	20	-	50	50	100
2.	PEC		PEC-IV	4(3-1-0)	30	20	-	50	50	100
3.	OEC		OEC-II	4(3-1-0)	30	20	-	50	50	100
4.	Project		Project	10(0-0-20)	-	50	-	50	50	100
				22						

*** Note:** Internal Evaluation of Project in VII semester will be conducted by the Departmental Committee. Evaluation of project in VIII semester will be conducted by External and Internal Examiners.

ELECTIVE-I

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC		Biomedical Signal Processing	3(3-0-0)	30	20	-	50	50	100
2.	PEC		Satellite Communication	3(3-0-0)	30	20	-	50	50	100
3.	PEC		Digital System Design using VHDL	3(3-0-0)	30	20	-	50	50	100
4.	PEC		Data Communication Networks	3(3-0-0)	30	20	-	50	50	100

ELECTIVE-II

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC		Artificial Intelligence	3(3-0-0)	30	20	-	50	50	100
2.	PEC		Wireless Communication	3(3-0-0)	30	20	-	50	50	100
3.	PEC		VLSI Device Modelling	3(3-0-0)	30	20	-	50	50	100
4.	PEC		Microwave and Radar Engineering	3(3-0-0)	30	20	-	50	50	100

ELECTIVE-III

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC		Architecture And Applications Of Digital Signal Processors	4(3-1-0)	30	20	-	50	50	100

2.	PEC		Information Theory and Coding	4(3-1-0)	30	20	-	50	50	100
3.	PEC		Advanced Semiconductor Devices	4(3-1-0)	30	20	-	50	50	100
4.	PEC		RF Systems	4(3-1-0)	30	20	-	50	50	100

ELECTIVE-IV

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC		Image Processing	4(3-1-0)	30	20	-	50	50	100
2.	PEC		Neural Networks	4(3-1-0)	30	20	-	50	50	100
3.	PEC		Embedded Systems	4(3-1-0)	30	20	-	50	50	100
4.	PEC		Data Analytics	4(3-1-0)	30	20	-	50	50	100

OPEN ELECTIVE-I

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	OEC		Mobile Communication	3(3-0-0)	30	20	-	50	50	100
2.	OEC		Biomedical Electronics	3(3-0-0)	30	20	-	50	50	100

OPEN ELECTIVE-II

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	OEC		Image Processing	4(3-1-0)	30	20	-	50	50	100
2.	OEC		Fuzzy Logic with electronics engineering applications	4(3-1-0)	30	20	-	50	50	100

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I Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	PCC		Introduction to Signal Analysis	5(3-2-0)	30	20	-	50	50	100
2.	PCC		Estimation and Detection Theory	4(3-1-0)	30	20	-	50	50	100
3.	PCC		Advanced Semiconductor Devices	5(3-2-0)	30	20	-	50	50	100
4.	PCC		Neural Network	4(3-1-0)	30	20	-	50	50	100
Total Credits				18						

II Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	PCC		Digital Communication	4(3-1-0)	30	20	-	50	50	100
2.	PCC		Optical Communication	4(3-1-0)	30	20	-	50	50	100
3.	PEC		PEC-1	4(3-1-0)	30	20	-	50	50	100
4.	PEC		PEC-2	4(3-1-0)	30	20	-	50	50	100
Total Credits				16						

III Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	PCC		Advanced Digital Signal Processing	4(3-1-0)	30	20	-	50	50	100
2.	PEC		PEC-3	4(3-1-0)	30	20	-	50	50	100
3.	Seminar		-	2(0-0-4)	-	50	-	50	50	100
4.	Dissertation		-	4(0-0-8)	-	50	-	50	50	100
Total Credits				14						

IV Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	Dissertation		-	12(0-0-24)	-	50	-	50	50	100
Total Credits				12						

In the above series, the following responses were received from respected members:

Following points were suggested (for syllabus of EET-101/102) by respected BOS members in the online meeting:

1. Weightage of MOSFET must be embedded in Unit-II for its industrial prospects.

2. Topic 'modern display technique- OLED, AMOLED, PDP, QLED displays' must be incorporated in Unit –V.

3. Behzad Razavi/ "Fundamentals of Microelectronics"/ Wiley may be added as reference book.

Above points have been incorporated in the syllabus of B.Tech. First year as approved by BoS members present in the meeting.

Following points were suggested (for syllabus of II B. Tech. ET subjects) by respected BOS members in the online meeting:

Minuets of the BoS meeting 2nd year B. Tech.

In the BoS meeting for Department of Electronics Engineering held on 17th August 2020 at 11.00 AM in an online mode, the following suggestion has been provided by the BoS Committee members:

1. In the EMFT subject, the reference book of David K. Cheng should be in the text book section.
2. The subject Analog Electronics or Analog Circuits can be taught in the 5th Semester
3. The subject Control System may be included in the 4th semester.
4. Suggested to add FDSOI and PDSOI in the syllabus of Solid state devices.
5. The effect of poles and zeros in negative feedback can be added in the 3rd unit of subject Analog Circuits.
6. Recommended to add the books by Allen and Holberg, Razavi and the lecture series by Razavi for the subject Analog Circuits.

7. Addition of small signal analysis and large signal analysis (π model) etc. in the subject Analog Circuits is recomended.
8. The topic of Impedance and gain analysis of amplifier may be added in the subject of Analog Circuits.
9. As per the member of BoS, the changes made in the subject Signals and system syllabus is not needed, since, first part is necessary to students that will provide the base of subject. Only Laplace transform can be removed as students already studying in Mathematics II.
10. As suggested by a BoS member the subject Mathematics III may be removed and signals and systems subject can be introduced in III Semester in place of Mathematics III, which will provide good base to students and good learning to other subjects in IIIrd and subsequent semesters.
11. As per the suggestion by a BoS member, Control Systems which is currently in 6th semester should be taught in 4th semester that brings concepts of stability in amplifiers and other electronic devices. So, by removing Mathematics III, signals and systems can be taken into IIIrd Semester and in place of signals and system, control system can be taught in the 4th semester.

Following points were suggested (for syllabus of III B.Tech. ET subjects) by respected BOS members in the online meeting:

12. ANALOG COMMUNICATION syllabus should include the Analog communication Circuits (Transmitter and receiver circuit), Intermediate Frequency, Double Heterodyne Receiver and Analog receiver.

13. ANALOG COMMUNICATION Experiment list should include the transmitter and receiver experiments (no Kit base experiment, students need to prepare their transmitting and receiver circuit by themselves in Lab)

14. In the ANTENNAS AND WAVE PROPOGATION syllabus 'Antenna Principles' sections should discuss Parabolic and loop antenna along with Horn antenna, Patch antenna.

15. In the ANTENNAS AND WAVE PROPOGATION syllabus should contain Retarded potential, linear and binomial array, Return Loss of antenna

16. "Antenna Theory Analysis and Design, by C. A. Balanis" should be included in the TEXT book list of ANTENNAS AND WAVE PROPOGATION

17. MICROPROCESSOR subject to be renamed as MICROPROCESSOR & MICROCONTROLLER.

18. MICROPROCESSOR syllabus should contain AMR process (30% - 50% of the course), small portion of the 8051 microcontroller can be the there in the ARM section.

19. MICROPROCESSOR syllabus should contain cross compiler, RISC processor

20. MICROPROCESSOR experiments list should include sufficient amount of ARM based experiments

21. OPTOELECTRONICS can be replaced by the OPTICAL COMMUNICATION & SWITCHING NETWORK Subject with credit distribution of C(L-T-P) : 4(2-1-2)

22. DIGITAL COMMUNICATION can be teach with credit distribution as C(L-T-P) : 3(2-0-2).

23. In CONTROL SYSTEM Syllabus should include in "State variable Analysis" section, the Kalman Base Control.

24. BOS recommended to teach the CONTROL SYSTEM and SIGNAL SYSTEM Subject before teaching the ANALOG ELECTRONICS that brings concepts of stability in amplifiers and other electronic devices

Minutes of the BoS meeting 4th year B. Tech.

1. Recommendation of changing name from 'Radar and Microwave Engg.' to 'Microwave and Radar Engg.' was suggested for better clarity. In the MICROWAVE AND RADAR ENGINEERING syllabus following topics need to be added and to upgrade the syllabus also.
   a) S-parameters
   b) Microstrip Line
   c) Cyclotrons, directional coupler
   d) T-junctions
   e) Radar imaging
   f) High Power Devices
   g) Microwave filters
2. In PEC-II (Elective –II) the subject of 'COMPUTER NETWORKS' is suggested to be replaced by subject "DATA COMMUNICATION NETWORKS"

3. BoS recommended to include the topic of "Kalman Filtering" concept in ARTIFICIAL INTELLIGENCE Syllabus.
4. BOS recommended to verify the syllabus content of subjects 'MACHINE LEARNING' of B.Tech (2^{nd} year) and 'ARTIFICIAL INTELLIGENCE' of B.Tech Final year (Elective) to prevent overlapping of topics. It was however checked and verified.
5. BoS suggested to include a subject 'OPTICAL COMMUNICATION AND SWITCHING' as an elective subject (PEC). But Finally it got included in 6^{th} Semester.
6. BoS strongly recommended to modify/upgrade syllabus of subjects with new advance topics inclusions and suggested removal of obsolete topics from syllabus of subjects in all.

Minutes of the BoS meeting M. Tech (1^{st} and 2^{nd} year) M. Tech.

1. Following topics can be included in the Introduction to Signal Analysis (EET-501):

   Image as a Signal, Sampling of Image, Signal Analysing using Wavelet Transform

2. For Mobile Communication (EET-663) syllabus is also need to include recent technologies: GPRS, EDGE, UMTS, LTE and LTE-Advanced.

3. For the following subject's syllabus is very limited, need to revised thoroughly.

   (i) Advanced Semiconductor Devices (EET-503)
   (ii) Digital Communication (EET-502)
   (iii) Advanced Digital Signal Processing (EET-601)
   (iv) Optical Communication (EET-504)
   (v) Analog VLSI Circuits (PCC)
   (vi) Space Communication (EET-551)
   (vii) Antennas Analysis & Synthesis (EET-552)
   (viii) Image Processing (EET-653)
   (ix) Data Communication Networks (EET-655)
   (x) Wireless Communication (EET-556)
   (xi) VLSI System Design (EET-554)
   (xii) Communication Theory (EET-563)

1. During online BOS meeting with all members following suggestions are given:
   a. In the subject Introduction to Signal Analysis (ISA) syllabus include spatio temporal signal suggested by Dr. Y. N. Singh.
   b. In the Digital vlsi circuits include Design of operational Amplifier suggested by Dr. Y. N. Singh and include chapters of Jan M Rabaey, Anantha Chandrakasan,

Borivoje Nikolic, "Digital Integrated Circuits: A Design Perspective" Pearson Education as part of syllabus suggested by Mrs. Rajani Bisht.

c. Estimation and Detection Theory subject will be run as PCC 2 in M.Tech 1st Semester in 4 credits in 4(3-1-0) manner suggested by Dr. Y.N Singh, Dr. Rachna Asthana, Mrs. Rajani Bisht and other BOS members.
d. Subject Analog VLSI Circuits will be include as PEC-1 subject in 4 credits (3-1-0) Suggested by BOS members.
e. In Optical communication include optical amplifier, wavelength converter, Dispersion analysis, Link budget and Modulators suggested by Dr. Y.N Singh.
f. Course outcomes should be before syllabus suggested by Dr. Y.N. Singh.
g. In RF System include book of RF Microelectronics by Behzad Razavi suggested by Mrs. Rajani Bisht.
h. A new subject Introduced titled "Neural Network" in the M. Tech first Year (1st Semester) in PCC 4 with 4(3-1-0) credit and run in M. Tech 1st semester.