KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE, WARANGAL-15
(An Autonomous Institute under Kakatiya University, Warangal)
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MINUTES OF THE MEETING OF BOARD OF STUDIES
(BoS)Held at 2.30 pm on 15.06.2020 (Monday)
(Virtual Meeting)

Date: 15.06.2020
Time: 02:30 pm

Agenda:

1. **Review of Programme Specific Outcomes (PSOs) of B.Tech EEE**
2. **Approval of Scheme of B. Tech. EEE - V, VI, VII and VIII Semesters**
3. **Approval of Syllabus of B. Tech. EEE - V & VI Semesters Courses**
4. **Approval of Syllabus of Control Systems course for B.Tech ECE – V semester and Linear Control Systems course for B.Tech EIE – VI semester**
5. **Any other item with the permission of chair**

Members Present:

S.No.	Name of the Member	Designation	Position in BoS
1.	Dr. C. Venkatesh	*Professor &HoD, EEED, KITSW*	Chairperson, BoS
2.	Sri V. Ramaiah	*Professor of EEED, KITSW*	*Member*
3.	Dr. V. Rajagopal	*Professor of EEED, KITSW*	*Member*
4.	Sri M. Narasimha Rao	*Assoc. Professor of EEED, KITSW*	*Member*
5.	Dr. G. Rajender	*Assoc. Professor of EEED, KITSW*	*Member*
6.	Dr. D. M. Vinod Kumar	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (from renowned Academic Institute)*
7.	Dr. V. T. Somasekhar	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (from renowned Academic Institute)*
8.	Dr. M. Shailaja Kumari	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (University Nominee)*
9.	Sri T. Srimannarayana Murthy	*Chief Engineer (Elecl), KTPS, Kothagudem*	*External Member (from Industry)*
10.	Sri E. Ram Mohan Rao	*Associate Consultant, TCS, Hyderabad*	*External Member (from Industry)*
11.	Sri Ch. Ramesh	*Engineer, R&D, MEdha Servo Drives Pvt. Ltd., Hyderabad*	*External Member (from Industry)*
12.	Sri BalajoseGoli	*Software Development Manager, Oracle India Pvt. Ltd., Hyderabad*	*External Member (Post Graduate Meritorious Alumnus –Academia/Industry)*
13.	Dr. B. Jagadish Kumar	*Assoc. Professor of EEED,KITSW*	*Co-OptedMember-1*
14.	Dr. G. Rajender Naik	*Assoc. Professor of EEED,KITSW.*	*Co-OptedMember-2*
15.	Dr. P. Nagarjuna Reddy	*Asst. Professor of EEED, KITSW*	*Co-OptedMember-3*

MoM:

The meeting commenced at 2.30 pm and was presided over by the Chairman, BoS. At the outset, the Chairman, BoS welcomed the members to the meeting to discuss the pre-notified items on the agenda and approval.

1. Virtual BoS meeting of Electrical & Electronics Engineering Department was conducted on 15.06.2020, from 2:30 pm to 6:30 pm through Google Meet platform.
2. The above BoS members were present and offered their valuable suggestions.

RESOLUTIONS:

BOS-EEE-June2020-RES1:

Resolution on Agenda1: Review of Programme Specific Outcomes (PSOs) of B.Tech EEE

Chairman, BoS has put forward the Programme Specific Outcomes (PSOs) of B.Tech (EEE) to the Members of BoS for considering of reviewing.

PSOs of B.Tech(EEE) are - Considered for Review:

PSO1	The Electrical and Electronics Engineering graduates are capable of applying the knowledge of mathematics and sciences in modern power industry
PSO2	Analyze and design efficient systems to generate, transmit, distribute and utilize electrical energy to meet social needs using power electronic systems.
PSO3	Electrical Engineers are capable to apply principles of management and economics for providing better services to the society with the technical advancements in renewable and sustainable energy integration
PSO4	Practice professional ethics and work in a team and communicate to keep abreast of latest developments to achieve project objectives for the betterment of the society.

Chairman, BoS presented the revised PSOs of B.Tech EEE.
The members of BoS suggested changing to two PSOs. PSO 3 and PSO4 can be removed as they are redundant to POs.

As per the suggestions offered by the BoS members, following PSOs are approved:

The Electrical and Electronics Engineering graduates will be able to

PSO	Statement
PSO1	**Apply the fundamental knowledge of electrical and electronics engineering in providing solutions for modern power industry and multi disciplinary areas**
PSO2	**Analyse, design and simulate systems to generate, transmit, distribute, utilize and control electrical energy to meet societal and environmental needs using electrical and electronic systems**

PSO	Statement	Skill Area	Justification (Ability for)
PSO1	Apply the fundamental knowledge of electrical and electronics engineering in providing solutions for modern power industry and multi disciplinary areas	Advanced Engineering Knowledge	Applying knowledge to develop ▪ power electronic converters and drives ▪ controllers ▪ software tools
PSO2	Analyse, design and simulate systems to generate, transmit, distribute, utilize and control electrical energy to meet societal and environmental needs using electrical and electronic systems	Research Ability and Lifelong Learning	Analysis of: ▪ power generation using conventional and green energy sources ▪ electric vehicles ▪ Microgrid ▪ Smart grid ▪ Power quality improvement using custom power devices ▪ Power flow control using FACTS devices

BOS-EEE-June2020-RES2:

Resolution on Agenda2: Approval of Scheme of B. Tech. EEE - V, VI, VII and VIII Semesters

Chairman, BoS presented the scheme for B.Tech EEE – V, VI, VII & VIII semesters. The changes incorporated in the scheme were discussed.

S. No.	Course Code	Course Name	Suggestions made by the BoS members	Remarks
1.	**U18MH501 (MC)**	*Constitution of India is replaced with* **Universal Human Values – II**	--	--
2.	**U18EE 603C (PE-II)**	*Special Purpose Machines is replaced with* **Electric Vehicles**	Change of title of course to **Electric Vehicles**	The same is incorporated with the syllabus revised with electric vehicles
3.	**U18EI614 (PCC)**	*Signals & Systems is renamed to* **Signals & Linear Systems**	--	--

BOS-EEE-June2020-RES3:

Resolution on Agenda3: Approval of Syllabus of B. Tech. EEE - V & VI Semesters Courses

Chairman, BoS presented the syllabus for B.Tech EEE – V &VI semester courses.

Renewable Energy Systems (EE502A):

- The mandatory course in VIII semester has been shifted to V semester as a Professional Elective to provide an elementary treatment on the different renewable energy technologies for generation of electric power
- The concepts of Microgrid and distributed generation, renewable energy economics have been removed as this course is aimed to provide a basic knowledge on renewable energy generation
- Solar energy is introduced in Unit-I followed by geothermal and wind energy in Unit-II
- Unit-III deals with ocean energy and bioenergy
- Fuel cells and energy storage systems are introduced in Unit-IV

Electrical Engineering Materials (EE502B):

- This course is newly introduced to provide an insight of the materials which are used in electrical engineering
- Conducting materials and semiconducting materials are introduced in Unit-I to provide knowledge on the properties of the materials that are used for electrical conduction.
- Insulating materials and dielectric materials are introduced in Unit-II to provide knowledge on the properties of materials that are used for electrical insulation.
- Unit-III deals with magnetic materials. The materials used in nanotechnology are introduced in Unit-III to make the students aware of the latest research area of nanotechnology.
- Special purpose materials introduced in Unit-IV has been introduced in Unit- IV which deals with different types of materials which are used in electrical engineering other than conduction and insulation. Electronic components topic has been introduced in Unit-IV to get the students familiarized with the materials used in the making of resistors, inductors, capacitors and transformers.

Communication Engineering (EE502C):

- This course is newly introduced to get the students familiarized with the basics of communication engineering.

- Unit-I deals with introduction of communication systems and amplitude modulation.
- Unit-II deals with angle and pulse modulation.
- Unit-III deals with digital modulation.
- Unit -IV deals with bandpass data transmission systems.

Power Systems-II (EE503):

- This course is shifted from VI semester (URR14) to V semester (URR18).
- The equivalent circuit representation of long line in Unit-I is deleted as it is being repeated.
- Determination of the capacities of synchronous modifiers and analytical methods in Unit-II has been deleted based on the suggestion given by external BoS members.
- Insulation coordination and volt-time curves topics in Unit-IV have been deleted as it is covered in the course of "*Electromagnetic Fields*" in III semester.

Electrical Machines-II (EE504):

- The contents in the course are rearranged. In the revised content, Unit -I deals with three phase induction motors and Unit-II deals with single phase machines. Unit-III and Unit-IV deal with synchronous generators and synchronous motors respectively.
- The concept of Circle diagrams to determine the induction motor performance in Unit-I is removed as this method is not in vogue now.
- The concept of short circuit transients in synchronous generators has been removed as it is covered in the course of "*Power System Operation and Control*".
- Special purpose machines topic has been removed as it is being covered in the course of "*Hybrid Electric Vehicles*".

Power Electronics (EE506):

- The concept of series and parallel operation of SCRs and determination of string efficiency has been deleted in Unit-I.
- Forced communication techniques, earlier in Unit-I, has been shifted to Unit-III as it is more relevant with choppers and inverters.

- Power factor improvements topic in Unit-II has been removed. Distortion factor of AC to DC converters has been modified as it is in GATE syllabus.
- Voltage source inverters (180° & 120° conduction) and principle and operation of centre tap &bridge type cycloconverters have been mentioned in Unit-III and unit-IV respectively to make the course content more relevant to the students and course handling faculty.

Electrical Machines Laboratory -II (EE508):

- This course is shifted from VI semester (URR14) to V semester (URR18).
- The experiment on *determination of circle diagrams of a three-phase induction motor using no load and blocked rotor test* is removed as this method is not in vogue now.
- A new experiment on *speed control of three phase induction motor using rotor resistance control* is introduced.

Power Electronics Laboratory (EE509):

- This course is shifted from VI semester (URR14) to V semester (URR18).
- A new experiment on *single phase bridge inverter* is introduced.
- The experiment on *DC Morgan chopper* is replaced with *Four quadrant chopper.*

Microprocessors and Microcontroller Systems (EC511):

- No changes

Microprocessors and Microcontroller Systems Laboratory (EC512):

- No changes

Seminar (EE510):

No major changes

S. No.	Course Code	Course Name	Suggestions made by the BoS members	Remarks
1.	U18EE502A	Renewable Energy Systems	Course Outcomes (COs) and Course Articulation Matrix (CAM) is to be changed	Changes incorporated as suggested
2.	U18EE502B	Electrical Engineering Materials	• COs and CAM is to be changed • New edition of textbook is to be included	• COs and CAM have been changed • Reprint edition of

				textbook is included
3.	U18EE502C	Communication Engineering	--	--
4.	U18EE503	Power Systems-II	• COs and CAM is to be changed • **Representation of power systems** is to be changed to **Per unit representation of power systems**	• COs and CAM have been changed • **Per unit representation** has been included
5.	U18EE504	Electrical Machines-II	• COs and CAM is to be changed	• COs and CAM have been changed
6.	U18EE506	Power Electronics	• COs and CAM is to be changed • **Qualitative treatment of SiC and GaN devices** is to be introduced in Unit -I, **R-L-E loads** are to be included in Unit -II and **Forward &flyback converters** are to be included in Unit-IV	• COs and CAM have been changed • Suggested topics are included in Unit-I and Unit-IV
7.	U18EC511	Microprocessors and Microcontroller Systems	--	--
8.	U18EE508	Electrical Machines Laboratory-II	• COs and CAM is to be changed	• COs and CAM have been changed
9.	U18EE509	Power Electronics Laboratory	• COs and CAM is to be changed • **Simulation of SPWM controlled inverter and DC-DC converters** are to be included	• COs and CAM have been changed • Suggested topics have been included as two experiments (simulation using MATLAB)
10.	U18EC512	Microprocessors and Microcontroller Systems Laboratory	--	--
11.	U18EE510	Seminar	--	--

B.Tech – EEE – VI SEM

Utilization of Electrical Energy (EE603A):

- This course has been changed from Mandatory course (URR14) to Professional Elective (URR18).
- Different types of electric braking, reverse current, rheostat and regenerative braking, counter current braking of AC and DC motors has been removed in Unit-I. Speed control methods of DC traction motors topic has been included in detail to make it easier for the students to understand the concept of speed control.
- Control equipment in Electric heating in Unit-III has been removed in Unit-III.

High Voltage Engineering (EE603B):

- The concept of overvoltage phenomenon has been introduced in Unit-IV as it is essential for electric power engineers to have knowledge on causes of overvoltages in electric systems.

Electrical Vehicles (EE603C):

- This course is newly introduced in the place of *"Special Purpose Machines"* to let the students understand the emerging trend of electric vehicles.
- Unit-I deals with introduction of hybrid electric vehicles, the concept of hybridization and the fundamentals of HEV.
- Unit-II deals with PHEVs, SHVs and their applications for military vehicles.
- Unit-III deals with power electronics, electric machines & drives and electric energy sources & storage devices that are employed in electric vehicles.
- Unit -IV deals with modelling of battery and simulation of electric and hybrid vehicles using MATLAB.

Power System Operation and Control (EE604):

- This course is shifted from VII semester (URR14) to VI semester (URR18).
- The system data for load flow studies in Unit-I is deleted.
- The concept of P-Q control in Unit-II has been deleted as it is similar to that of voltage control in the course of *"Power Systems-II"* in V semester.
- The terms of synchronizing power coefficient, critical clearing angle and critical clearing time are introduced to give them much importance as they are frequently

asked in GATE and other competitive exams. The concepts of steady state stability of synchronous machine and effect of excitation on generator power limits has been deleted as it is reflected in the course of "*Electrical Machines -II*" in V semester.

Power Semiconductor Drives (EE605):

- The concepts of braking and speed control of induction and synchronous motor, which were earlier in Unit- I have been shifted to Unit-III and Unit -IV for better understanding for the students.

Control Systems Engineering (EE606):

- This course is shifted from V semester (URR14) to VI semester (URR18).
- The topic of '*Tacho generators*' is removed from Unit-II.
- The topics '*Routh Hurwitz Criterion, Concept of root locus and construction of root loci, Effects of adding poles and zeros*' of Unit -II have been shifted to Unit-III under stability analysis.
- '*Stability analysis using MATLAB*' has been introduced in Unit-III to get the students exposed to practical knowledge on all the contents being covered under theory.
- It has been resolved that the students must be encouraged to track the responses of first and second order systems and determine the system's stability using MATLAB.

Signals and Systems (EI614):

- This course is newly introduced to let the students get knowledge on analog and digital signal processing, ideas at the heart of modern communication and measurement.
- Unit- I deals with introduction to continuous and discrete time signals, sampling theorem, LTI systems add their properties.
- Unit-II deals with continuous Time Fourier Transforms
- Unit -III deals with Discrete Time Fourier Transforms
- Unit -IV deals with z- transforms, region of convergence and inverse z-transforms.
- This course acts a prerequisite course for "*Digital Signal Processing (VIII semester)*"

Control Systems Engineering Laboratory (EE607):

- This course is shifted from V semester (URR14) to VI semester (URR18).

- The experiments of *study of characteristics of DC servo motor* and *performance of temperature controller using PID* have been removed.
- New experiment of *stability analysis through polar plot of linear time invariant system using MATLAB* is introduced to improve the programming skills of the students.

Power Semiconductors Drives Laboratory (EE608):

- This course is shifted from VII semester (URR14) to VI semester (URR18).
- New experiments of *Simulation of single-phase fully controlled converter DC drive using MATLAB-Simulink* and *Simulation of VSI controlled induction motor drive using MATLAB-Simulink* are introduced to improve the programming skills of the students.

Mini Project (EE610):

- No major changes.

S. No.	Course Code	Course Name	Suggestions made by the BoS members	Remarks
1.	U18EE603A	Utilization of Electrical Energy	• COs and CAM is to be changed • **Industrial Utilization** is to be changed to **Industrial Drives** in Unit-II • **Illumination** is to be treated qualitatively.	• COs and CAM have been changed • **Industrial Utilization** is changed to **Industrial Drives** in Unit-II • **Qualitative treatment** is included in **Unit-IV Illumination**
2.	U18EE603B	High Voltage Engineering	• COs and CAM is to be changed	• COs and CAM have been changed
3.	U18EE603C	Electric Vehicles	• COs and CAM is to be changed	• COs and CAM have been changed
4.	U18EE604	Power System Operation and Control	• COs and CAM is to be changed • Unit-IV is to be refined. Synchronizing power coefficient is to be removed.	• COs and CAM have been changed • Suggested changes are implemented.
5.	U18EE605	Power Semiconductor Drives	• COs and CAM is to be changed • Latest edition of the textbook is to be included	• COs and CAM have been changed • Recent edition of Electric Drives textbook is included

6.	U18EE606	Control Systems Engineering	• COs and CAM is to be changed • **Mason's Gain formula** is to be included in Unit-I and **lag, lead and lag-lead compensators** are to be included in Unit -IV • **Ogata** book is to be included as reference book	• COs and CAM have been changed • Suggested changes are implemented • Modern control Systems book is included as reference book
7.	U18EI614	Signals and Linear Systems	--	--
	U18EE607	Control Systems Engineering Laboratory	• COs and CAM is to be changed	•COs and CAM have been changed
	U18EE608	Power Semiconductor Drives Laboratory	• COs and CAM is to be changed	•COs and CAM have been changed
10.	U18EE610	Mini Project	--	--

BOS-EEE-June2020-RES4:

Resolution on Agenda4: Approval of Syllabus of Control Systems course for B.Tech ECE – V semester and Linear Control Systems course for B.Tech EIE – VI semester

Chairman, BoS presented the syllabus of Linear Control Systems (U18EE511) for B.Tech EIE – V Semester and Control Systems (U18EE611) for B.Tech ECE – VI Semester.

S. No.	Course Code	Course Name	Suggestions made by the BoS members	Remarks
1.	**U18EE511** *(for B.Tech EIE – V Sem)*	**LINEAR CONTROL SYSTEMS**	• COs and CAM is to be changed • **Mason's Gain formula** is to be included in Unit-I and **lag, lead and lag-lead compensators** are to be included in Unit -IV	• COs and CAM have been changed • Suggested changes are implemented
2.	**U18EE611** *(for B.Tech ECE – VI Sem)*	**CONTROL SYSTEMS**	• COs and CAM is to be changed • **Mason's Gain formula** is to be included in Unit-I and **lag, lead and lag-lead compensators** are to be included in Unit -IV	• COs and CAM have been changed • Suggested changes are implemented

BOS-EEE-June2020-RES5:

Resolution on Agenda5: Any other item with the permission of chair

Chairman, BoS appraised the following academic activities carried out in the academic year 2019-20:

1. All the courses are taught and assessed as per Table of Specification (ToS).
2. During lockdown period online classes were taken to complete the syllabus as per scheduled time-table. Online classes were taken through platform - Google Meet, Cisco Webex, Zoom from 20-04-2020 to 07-05-2020.
3. Internal Exams – Minor-2, MSE-2, Mini Project Viva Voce were conducted online during May 2020.
4. External Exams – Laboratory Exams, Major Project Viva Voce were conducted online during May 2020.
5. Online internships are being encouraged to students to be completed during June 2020 and are guided by faculty counselors for selection of suitable organization and internship area.

Chairman, BoS invited suggestions from External BoS Members towards strengthening of Teaching/Learning Process

Suggestions Received from External BoS Members:

1.	**Dr. D. M. Vinod Kumar** *Professor, Dept. of EEE, NIT, Warangal*	Appreciated the online classes taken by faculty and online exams conducted. Suggested to plan well for next semester to take blended form of classes.
2.	**Dr. V. T. Somasekhar** *Professor, Dept. of EEE, NIT, Warangal*	Suggested to plan well for both theory and practical classes. Faculty to keep in mind that COs should be attained by students.
3.	**Dr. M. Shailaja Kumari** *Professor, Dept. of EEE, NIT, Warangal*	UHV-II course evaluation should be different from regular theory courses. In this activities are important and proper assessment method is to be adopted.
4.	**Sri T. Srimannarayana Murthy** *Chief Engineer (Elecl.), KTPS, Kothagudem*	Communication skills must be included in curriculum. Being an excellent communicator can help propel students' career. Good communication skills can aid in helping student to land an interview and pass the selection process. Being able to articulate well provides a significant advantage! To do job effectively, to discuss problems, request information, interact with others, and have good human relations skills – these are all part of having good communication skills. They help in being understood well and in helping understand the needs of those around.
5.	**Sri E. Ram Mohan Rao** *Associate Consultant, TCS, Hyderabad*	Softskills play a major role for students to be employed. Students to be motivated to undergo internship for industry exposure.
6.	**Sri Ch. Ramesh** *Sr. Engineer, R&D, MEdha Servo Drives Pvt. Ltd., Hyderabad*	1. If possible, Please Include latest innovations / Topics/ Present Running Technologies which are really useful for the students to move further for higher level studies & for Professional Life. 2. Please try to encourage the students to gain more practical knowledge rather than Theoretical

7.	**Sri Balajose Goli** *Software Development Manager, Oracle India Pvt. Ltd., Hyderabad*	1. **Industry Internships** - Please encourage as many students as possible to get to an industry before they actually do, to know how industry wants them before they join. 2. **Problem Solving** - One of the necessary traits in an engineer that we all would like to see as industry folk, **learning the concept/theory by solving a problem**. This concept is being followed religiously in IITs. 3. **Soft skills** - When you can't present what you do, it directly means you don't know as much as the one who presents it well. "Introducing English" into a core technical competitive exam like GATE is a best example. Please feel free to invite our alumni to take sessions about the importance of soft skills.

At the end, Dr. C. Venkatesh, Professor & Head, Chairperson, BoS, EEED, thanked all the BoS members for giving their suggestions and approving the B.Tech EEE scheme and syllabus.

The meeting was adjourned at 6:30pm.

Regards

Dr. C. Venkatesh
Chairperson, BoS of EEE, KITSW
Professor & Head, EEED

Members Present:

S.No.	Name of the Member	Designation	Position in BoS	Signature
1.	Dr. C. Venkatesh	*Professor &HoD, EEED, KITSW*	Chairperson, BoS	
2.	Sri V. Ramaiah	*Professor of EEED, KITSW*	*Member*	
3.	Dr. V. Rajagopal	*Professor of EEED, KITSW*	*Member*	
4.	Sri M. Narasimha Rao	*Assoc. Professor of EEED, KITSW*	*Member*	
5.	Dr. G. Rajender	*Assoc. Professor of EEED, KITSW*	*Member*	
6.	Dr. D. M. Vinod Kumar	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (from renowned Academic Institute)*	
7.	Dr. V. T. Somasekhar	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (from renowned Academic Institute)*	
8.	Dr. M. Shailaja Kumari	*Professor, Dept. of EEE, NIT, Warangal*	*External Member (University Nominee)*	
9.	Sri T. Srimannarayana Murthy	*Chief Engineer (Elecl), KTPS, Kothagudem*	*External Member (from Industry)*	
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11.	Sri Ch. Ramesh	*Engineer, R&D, MEdha Servo Drives Pvt. Ltd., Hyderabad*	*External Member (from Industry)*	
12.	Sri BalajoseGoli	*Software Development Manager, Oracle India Pvt. Ltd., Hyderabad*	*External Member (Post Graduate Meritorious Alumnus –Academia/Industry)*	
13.	Dr. B. Jagadish Kumar	*Assoc. Professor of EEED,KITSW*	*Co-OptedMember-1*	
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15.	Dr. P. Nagarjuna Reddy	*Asst. Professor of EEED, KITSW*	*Co-OptedMember-3*	