



ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

(Approved by A.I.C.T.E, New Delhi & Affiliated to JNTU Anantapur, Anantapuramu)
(Institute Accredited by NAAC, Bangalore) (Institute Accredited by IE (I), Kolkata)

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

MINUTES of 16th BOS

Date & Time
28.06.2023 & 10.00 am



ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES

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Academic Year 2022-2023

MINUTES OF BOARD OF STUDIES

The meeting of the Board of Studies in Electrical and Electronics Engineering (UG & PG) of the Department of Electrical and Electronics Engineering, AITS, Rajampet held on 28.06.2023 at 10 a.m. to discuss the revision of curriculum and syllabus of B. Tech and M. Tech (E.P.S).

The following members were present for the BoS meeting

S. No.	Name of the Board Member	Designation	Institute/Industry	Role
Internal Members				
1.	Dr. M. Padma Lalitha	Professor	AITS, Rajampet	Chairman
2.	Dr. P. B. Chennaiah	Associate Professor	AITS, Rajampet	Member
3.	Dr. S. Suresh	Associate Professor	AITS, Rajampet	Member
4.	Mr. C. Ganesh	Assistant. Professor	AITS, Rajampet	Member
External Members				
5.	Dr. M. Sydulu	Ex. Professor	NIT, Warangal	Academic Expert
6.	Dr. K. Siva Kumar	Associate Professor	IIT, Hyderabad	Academic Expert
7.	Dr. K. Sreenivas	Superintending Engineer	APSPDCL, Nellore	Industry Expert
8.	Mr. P. Amarnath	Application Development Senior Analyst	Accenture, Hyderabad	Alumni



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AGENDA OF THE MEETING

Item No.	Particulars
B6S/2023/EEE/UG/PG/16.1	Ratification of 15 th Board of Studies meeting.
B6S/2023/EEE/UG/PG/16.2	Ratification of 15 th Board of Studies meeting action taken.
B6S/2023/EEE/UG/PG/16.3	Discussion on stakeholder's feedback on curriculum.
B6S/2023/EEE/UG/PG/16.4	Discussion on course structure for M. Tech (EPS) R23 Reg.
B6S/2023/EEE/UG/PG/16.5	Discussion on detailed syllabus for M. Tech (EPS) R23 Reg.
B6S/2023/EEE/UG/PG/16.6	Discussion on COs, POs, CO-PO mapping etc.



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MINUTES OF THE MEETING

Dr. M. Padma Lalitha, Professor and Head Department of Electrical & Electronics Engineering, Chairman, BoS initiated the meeting with a warm welcome and thanked them for accepting the invitation to the 16th BoS meeting.

Item No: 1 BoS / 2023 / EEE / UG & PG / 16.1

Ratification of the 15th Board of Studies meeting held on 15.10.2022

The external BoS members have ratified the points discussed in the 15th Board of Studies meeting held on 15/10/2022.

Item No: 2 BoS / 2023 / EEE / UG & PG / 16.2

Ratification of 15th BOS meeting action taken report

The BoS chairperson presented the action taken report on changes made in the Battery Energy Storage Systems (19A28DT), Electric Vehicles (20A25FT) syllabus. The copy of revised syllabus is given Annexure-I.

Item No: 3 BoS / 2023 / EEE / UG & PG / 16.3

Discussion on stakeholder's feedback on curriculum.

The BoS chairperson presented the stakeholders feedback on curriculum received from the feedback committee approved by PAC (Programme Assessment Committee). The resolutions are appended in Annexure-II.

During the meeting the following suggestions given by the BoS members.

Suggestions given by Dr. M. Sydulu

- Include present state of art and practical aspects in the syllabus wherever it is applicable.
- Include books with new edition in text books and reference books section.
- Suggested additional text books relevant to the syllabus.
- Suggested recent topics, swarm algorithms and laboratory experiments.



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Item No: 6 BoS / 2023 / EEE / UG & PG / 16.4

Discussion on course structure for M. Tech (EPS) R23 Reg.4

The BoS chairperson discussed the course structure for M. Tech (EPS) R23 Regulation and the BoS members approved the course structure (course structure is copy enclosed in Annexure-III).

Item No: 7 BoS / 2023 / EEE / UG & PG / 16.5

Discussion on detailed syllabus for M. Tech (EPS) R23 Reg.

The BoS chairperson discussed the syllabus for M. Tech (EPS) R23 Regulation, and the BoS members approved the syllabus.

Item No: 8 BoS / 2023 / EEE / UG & PG / 16.6

Discussion on COs, POs, CO-PO mapping etc.

The BoS chairperson and other members discussed the COs, POs, and CO-PO mapping with the external BoS members. The BoS members approved the CO-PO mapping.


Dr. M. Padma Lalitha

Chairman
Head of the Department
Electrical & Electronics Engineering
Annamacharya Institute of Technology & Sciences
Bavurpalli, Rajampet - 516 124



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Annexure-I (Action Taken Report - Revised Syllabus for Battery Energy Storage Systems (R19))

Title of the Course Battery Energy Storage Systems -
Category OEC
Course Code 19A28DT
IV
Year
Semester II
Branch All Branches

Unit 1 Introduction to Energy Storage Systems (9)

Batteries: Lead Acid Battery, Nickel based batteries, Sodium based batteries, Lithium based batteries – Li-ion & Li-poly, Metal Air Battery, Zinc Chloride battery.

Learning Outcomes: At the end of the unit, the student will be able to

- Understand the fundamentals concepts of battery storage systems
- Know the types of battery storage systems

Unit 2 Battery Characteristics (9)

Cells and Batteries- conversion of chemical energy to electrical energy- Battery Specifications: Variables to characterize battery operating conditions and Specifications to characterize battery nominal and maximum characteristics; Efficiency of batteries;

Learning Outcomes: At the end of the unit, the student will be able to

- Understand the concept of battery specifications and characteristics.
- Know the concept of batteries efficiency.

Unit 3 Battery Parameters (9)

Electrical parameters- Heat generation- Battery design- Performance criteria for Electric vehicles batteries- Vehicle propulsion factors- Power and energy requirements of batteries Meeting battery performance criteria- setting new targets for battery performance.

Learning Outcomes: At the end of the unit, the student will be able to

- Understand the concept of battery parameters and performance.
- Know the concept of EV and energy requirements for better performance.

Unit 4 Battery Management System (9)

Battery thermal management system, Battery Management System: Definition, Parts: Power Module, Battery, DC/DC Converter, load, communication channel, Battery Pack Safety, Battery Standards & Tests.

Learning Outcomes: At the end of the unit, the student will be able to

- Understand the concept of Battery management system.
- Know the concept of battery safety and standards.

Unit 5 Battery Testing, Disposal & Recycling (9)

Battery testing, limitations for transport and storage of cells and batteries, Recycling, disposal and second use of batteries. Environment and Human Health impact assessments of batteries, General recycling issues and drivers, methods of recycling of EV batteries

Learning Outcomes: At the end of the unit, the student will be able to

- Understand the concept of battery testing
- Discuss the concept of recycling and disposal of used battery.



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(Revised Syllabus for Electric Vehicles (R20))

Title of the Course Electric Vehicles
Category OEC
Course Code 20A25FT

Year III
Semester I
Branch All Branches

Unit 1 Introduction to Electric Vehicles (EV) (8)

Introduction to EV system, History of EV -Development towards 21st Century, Components of EV System – EV Advantages – Types–EV market - Electric Vehicles for the future.

Learning Outcomes: At the end of the unit, the student will be able to:

- Understand the working vehicle and recent trends
- Understand Electric vehicle configuration and it's components

Unit 2 Electric Vehicle Mechanics (10)

Road way fundamentals, law of motion, vehicle kinetic– Propulsion Power - Velocity and Acceleration - Tractive Power– Energy Consumption Energy Consumption- Electric Vehicle drivetrain.

Learning Outcomes: At the end of the unit, the student will be able to:

- Understand Propulsion Power and Energy Consumption.
- Understand Velocity and Acceleration of EV
- Understand the vehicle power drivetrain.

Unit 3 Energy Sources (10)

Electric vehicle power source - Battery Basics - Lead-Acid Battery- Nickel-Cadmium Battery- Li-Ion Battery- capacity, state of charge and discharge, specific energy, specific power, Rag-one plot. Alternative Energy Sources- Fuel Cells- Supercapacitors etc.

Learning Outcomes: At the end of the unit, the student will be able to:

- Identify the types of power sources for electric vehicle
- Understand the battery usage for electric vehicle
- Learn the different types of batteries.

Unit 4 EV Motors (8)

Motor Ratings-sizing, selection of EV motors- Types of EV motors-overview (speed- torque characterizes) of Three-Phase induction Motor - BLDC and Switched reluctance motor.

Learning Outcomes: At the end of the unit, the student will be able to:

- Describe the various type of EV motors.
- Describe the characteristics of EV motors

Unit 5 EV Converters (8)

Introduction to Electrical Vehicle converters- DC-DC converter and DC-AC (PWM) converters.

Learning Outcomes: At the end of the unit, the student will be able to:

- Describe various EV converters.



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Annexure-II (Stakeholder's Feedback)

The following recommendations have been forwarded from the feedback committee and PAC to the BOS.
The resolutions passed are provided point wise below:

S. No.	Decision About	Resolution
1.	Incorporate courses from new trends in technology into curriculum.	It has been resolved to incorporate new trends in technology into curriculum.
2.	Introduce more courses related to Electric Vehicles.	It has been resolved to introduce more no. of courses related to Electric Vehicles.
3.	Include concept of Cloud Computing technologies into curriculum.	It has been resolved to include the concept of Cloud Computing technologies into curriculum.
4.	Incorporate concept of Cyber Security into curriculum.	It has been resolved to incorporate concept of Cyber Security into curriculum.
5.	Conduct workshops on IoT and EVs.	It has been resolved to conduct workshops on IoT and EV technologies.

Handwritten Signature
Head of the Department
Electrical & Electronics Engineering
Annamacharya Institute of Technology & Sciences
Bavannaballi, Rajampet - 516 126



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Annexure-III (Course Structure for R23 M. Tech (EPS))

Semester-I							
S.No.	Core/ Elective	Subject Code	Course Name	Hours per Week			C
				L	T	P	
1.	PC	23B211T	Advanced Power System Analysis / MOOCS	3	0	0	3
2.	PC	23B212T	Advanced Power System Protection / MOOCS	3	0	0	3
3.	PE	23B21AT	HVDC Transmission	3	0	0	3
		23B21BT	Wind and Solar Systems				
		23B21CT	Restructured Power Systems.				
		23B21DT	Modern Control Theory				
			MOOCS				
4.	PE	23B21ET	Electrical Power Distribution System	3	0	0	3
		23B21FT	Reactive Power Compensation and Management				
		23B21GT	Mathematical Methods for Power Engineering				
		23B21HT	Hybrid Electric Vehicles				
			MOOCS				
5.	MC	23BE11T	Research Methodology and IPR	2	0	0	2
6.	PL	23B211L	Power system Simulation lab-1	0	0	4	2
7.	PL	23B212L	Power System Protection lab	0	0	4	2
8.	AU	23B113T	Disaster Management	2	0	0	0
			Total Credits				18

Semester-II							
S.No.	Core/ Elective	Subject Code	Course Name	Hours per Week			C
				L	T	P	
1.	PC	23B221T	EHV AC Transmission / MOOCS	3	0	0	3
2.	PC	23B222T	Power System Control & Stability /	3	0	0	3
3.	PE	23B22AT	Smart Grid Technologies	3	0	0	3
		23B22BT	Economic Operation of Power Systems				
		23B22CT	Swarm Intelligence Techniques in Power Systems				
		23B22DT	Industrial Load Modelling and Control				
			MOOCS				
4.	PE	23B22ET	AI Techniques in Power Systems	3	0	0	3



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		23B22FT	Power Quality				
		23B22GT	Power Apparatus Design				
		23B22HT	Dynamics in Linear Systems				
			MOOCS				
5.	MC	23B223P	Mini Project with Seminar	0	0	4	2
6.	PL	23B221L	Power System Simulation Lab II	0	0	4	2
7.	PL	23B222L	Advanced Power Systems Lab	0	0	4	2
8.	AU	23BC21T	Academic and Research Report writing	2	0	0	0
			Total Credits				18

Semester III							
S.No.	Core/ Elective	Subject Code	Course Name	Hours per week			C
				L	T	P	
1	PE	23B23BT	Flexible AC Transmission Systems	3	0	0	3
		23B23CT	Gas Insulated Systems				
		23B23DT	Energy Storage Technologies				
			MOOCS				
2.	OE	23B53DT	Business Analytics	3	0	0	3
		23B13ET	Industrial Safety				
		23B3BDT	Operations Research				
		23BE3AT	Cost Management of Engineering Projects				
		23B33ET	Composite Materials				
		23B43DT	Wireless Communications				
		23B23ET	Energy Conversion Systems				
3.	PW	23B231P	Phase-I Dissertation	0	0	20	10
			Total Credits				16

Semester IV							
S.No.	Core/ Elective	Subject Code	Course Name	Hours per week			C
				L	T	P	
1.	PW	23B241P	Phase-II Dissertation	0	0	32	16
			Total Credits				16



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LIST of MOOCS COURSES (One from each group)

Group I .

S. No.	MOOCS Course Name
1	Design of Photovoltaic Systems
2	Smart Grid: Basics to Advanced
3	Economic Operations and Control of Power Systems
4	Design of Electric Motors
5	DC Power Transmission
6	Digital Protection of Power System
7	Sustainable Power Generation
8	Cyber Security and Privacy

Group II .

S. No.	MOOCS Course Name
1	Power System Dynamics, Control
2	Fuzzy Sets, Logic and Systems &
3	Sensors and Actuators
4	Operation and Planning of Power
5	Nonlinear System Analysis
6	Introduction to Machine Learning

NOTE:

If any of the MOOCS courses listed above are not available in the SWAYAM portal, student has to choose any available MOOCS courses recommended by the department.



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Signature of the Board Members

S. No.	Name of the Board Member	Signature
1.	Dr. M. Padma Lalitha	<i>CPL</i>
2.	Dr. P. B. Chennaiah	<i>P.B.U</i>
3.	Dr. S. Suresh	<i>S. Suresh</i>
4.	Mr. C. Ganesh	<i>G</i>
5.	Dr. M. Sydulu	<i>Attended Through online</i>
6.	Dr. K. Siva Kumar	<i>»</i>
7.	Dr. K. Sreenivas	<i>»</i>
8.	Mr. P. Amarnath	<i>»</i>

Snapshots of 16th BoS Meeting Conducted on 28/06/2023

28:06

Meeting in "General"

Pop out

Chat

People

Base

React

View

Rooms

Apps

More

Camera

Mic

Share

Leave

Participants

Type a name

Share invite

Mute all

Presenters (2)

Attendees (7)

KS

Kavaturi Srinivas

DL

Dr. M. Padma Lalitha

AP

Anamath P (Guest)

KS

Kavaturi Srinivas (External)

P

P. Balachenniah (Guest)

PM

prof sydulah mah... (Guest)

9

Everyone

KS

Kavaturi Srinivas

DL

Dr. M. Padma Lalitha

AP

Anamath P (Guest)

KS

Kavaturi Srinivas (External)

P

P. Balachenniah (Guest)

PM

prof sydulah mah... (Guest)

Dr. M. Padma Lalitha

11:38 AM

6/28/2023