NITTE EDUCATION TRUST

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY
(An Autonomous Institution)
Approved and Accredited by AICTE, Affiliated to Visvesvaraya Technological University, Yelahanka, Bangalore - 560 064

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

1.2 Academic Flexibility

1.2.1 Percentage of new courses introduced of the total number of courses across all programs offered during the last five years

Name of the Course	Course Code	Year of Introduction
ELECTRIC CIRCUIT THEORY	17EE32	2017-18
COMPUTER ORGANIZATION	17EE362	2017-18
MEASUREMENTS AND TRANSDUCERS	17EE45	2017-18
PRINCIPLES OF COMMUNICATION SYSTEM	17EE461	2017-18
ELECTRICAL ENGINEERING MATERIALS	17EE462	2017-18
DATA STRUCTURES	17EE463	2017-18
PROJECT MANAGEMENT AND FINANCE	14EEE562	2015-16
LIC AND SIMULATION LAB	14EEL58	2015-16
VLSI CIRCUITS AND DESIGN	14EEE652	2015-16
ARTIFICIAL NUERAL NETWORKS	14EEE653	2015-16
RENEWABLE ENERGY SOURCES	14EEO661	2015-16
SCADA	14EEO662	2015-16
ENERGY AUDIT	14EEO663	2015-16
ENTREPRENEURSHIP DEVELOPMENT, MANAGEMENT & IPR	14EEH73	2015-16
MICRO AND SMART GRID	14EEE751	2015-16
ADVANCED POWER ELECTRONICS	14EEE752	2015-16
ESTIMATION AND COSTING	14EEE753	2015-16
BIO SENSORS AND INSTRUMENTATION	14EEO761	2015-16
DISCRETE CONTROL SYSTEMS	14EEO762	2015-16
POWER SYSTEM PROTECTION AND INDUSTRIAL CONTROL LAB	14EEL77	2015-16
AI APPLICATIONS TO POWER SYSTEMS	14EEE821	2015-16
REACTIVE POWER MANAGEMENT	14EEE823	2015-16
RELIABILITY ENGINEERING	14EEE824	2015-16
AUTOMOTIVE ELECTRONICS	14EEE826	2015-16

V. Ranganathan 20/7/19
Signature of HOD
(Dr.V.Ranganathan)

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

Department of Electrical and Electronics Engineering

BOS Panel 2017-2018

05/06/17

Sl No	Name	Designation	Position	Signature
1	Dr H M Ravikumar	HOD	Chairman	
2	Dr H L Suresh	Prof	Member	
3	Mrs Vasudha Hegde	Assoc Prof	Member	
4	Mr V M Parthasarathy	Assoc Prof	Member	
5	Mr C H V Ramesh	Asst Prof	Member	
6	Mrs Samanvita	Asst Prof	Member	
7	Mr Yashaswi K C	Asst Prof	Co ordinator	
8	**Dr Pradeep Kumar Dixit**	HOD, EEE Dept. MSRIT	External Acedamic Expert	
9	**R Alagiri Swamy**	Properator at Power Switch	External Industry Expert	

HOD

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BENGALURU

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Agenda:

- Finalization of VII and VIII semester syllabus for 2014 admitted students.
- Finalization of syllabus of Ist year for 2017 admitted students.
- Discussion on modification of M.Tech syllabus (Renewable Energy sources)

Proceedings:

The following points were discussed:

- HOD welcomed all the BOS members and introduced all.
- The discussion started with Ist year syllabus. Few changes were made by Mrs. Veena, which was incorporated. Few experiments were added for existing basic Electrical Lab for the students to get better exposure of the subject.
- Mr. R Alagiriswamy suggested including the concept of earth leakage current and ELCB also in UNIT 1 of Basic Electrical Engineering.
- Mr. R Alagiriswamy suggested to include voltage build up in DC generators in UNIT 2.
- Mr. R Alagiriswamy and Dr H M Ravikumar suggested to include digital meters in UNIT 3(Block diagram approach)
- Mrs. Vasudha Hegde suggested the changes in UNIT IV –instead of the concept on Effect of wattmeter readings on power factor as Effect of load on wattmeter reading and power factor.
- Mr. R Alagiriswamy suggested to add the concept of voltage regulation using residual magnetism in field (AVR).
- Discussion on lab experiments – Mr. R Alagiriswamy suggested to include another experiment titled Measurements of leakage current (ELCB) and MCB (over load current) with domestic wiring.
- Mr. R Alagiriswamy suggested including Electrical vehicles and Hybrid vehicles and their charging technique for UNIT V in Industrial Drives and Control subject of 7th semester.

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- Electric circuits of 3rd sem and NAS of 4th sem **combined** as 1 subject- 'Electric Circuit Theory' for 3rd sem. Network Synthesis is removed from this subject.
- As 3 Phase balanced systems is dealt in 1st year Basic electrical Engg course, it should not be considered for evaluation.
- To **Rename** and **Modify** the subject, 'Electronic circuits' in 3rd sem to 'Analog electronic Circuits' and 'Field Theory' in 4th sem to Electromagnetic Fields and Waves' , PLC in 5th sem to 'Industrial Automation and PLC'.
- **Program Electives-** OOPS and CO offered for 3rd Sem, Principles of Communication and Electrical Engineering Materials and Data Structures for 4th Sem.
- 'Electrical Power Generation, Transmission and Distribution ' **Shifted** from 4th sem to 5th semester.
- Program Elective RES in 5th sem, to be **moved** to 6th sem as open elective.
- Program Elective Project Management and Finance in 5th sem **shifted** to 6th sem as Program core Subject.
- Program electives to be offered for 5 sem- Fuzzy Logic, Smart Energy.
- Industrial drives and control of 7th Sem to be shifted to 8th sem.
- Artificial Intelligence shifted from 8th sem to 6th sem, Electrical Machine Design of 5th sem shifted to 7th sem.
- Advanced Control Theory, VLSI, Electric Hybrid Vehicles to be offered as Program Electives for 7th sem.
- Estimation and Costing of 7th sem moved to 6th sem as Program Elective
- Measurements and Transducers subject to include Smart sensors.

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- Discussion on 7th Semester subject CTPS- Dr H M Ravikumar and Dr H L Suresh suggested including Z-bus Algorithm in Unit I and also AGC mathematic model in Unit 3.
- Discussion on 7th Semester subject Switch gear and protection -Dr H L Suresh suggested for Reshuffling of Units.
- Mr. R Alagiriswamy suggested including contactors in Unit 3.
- Discussions on Advanced Power Electronics-Mr. R Alagiriswamy suggested to include mathematical techniques and analysis for switching converter.
- A new subject to be introduced in seventh semester elective titled "Estimation and costing" suggested by Mr. R Alagiriswamy.
- Dr. H L Suresh suggested Power System protection and Industrial Control Lab for 7th semester.
- BOE members are approved by BOS Committee.
- Internal and External examiners are approved by BOS Committee.
- Dr. H.M. Ravikumar thanked all the members.

Dr H M Ravikumar

(HOD/EEE)

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution Under Visvesvaraya Technological University, Belgaum)

YELAHANKA, BANGALORE

Department of Electrical and Electronics Engineering

Minutes of Meeting

BOS 2015 meeting held on 14-03-2015

Members attended:

Sl.No.	Name with designation	Designation and organization	Position	Signature
1.	Dr. H M Ravikumar	HOD,EEE Dept. NMIT	Chairman	
2.	Dr. Indira M S	Principal-Sir MVIT, Bangalore	Member-VTU nominee	Absent.
3.	M.M. Babu Narayanan	Chief Technical Adviser-Power Research & Development Consultants Pvt. Ltd. Bangalore	Member - Industry Expert	
4.	Mr. C Manjunath	Assistant manager-Customer Service Division,Yokogawa India Limited, Bangalore-560100	Member - Industry Expert	
4.	Dr. Pradip Kumar Dixit,	Professor. MSRIT, Bangalore	Member – Academic Expert	
5.	Prof. V Keshava Murthy	Professor, Dr. AIT, Bangalore	Member – Academic Expert	
6.	Dr. V Krishnan	Professor. NMIT, Bangalore	Member	
7.	Ms. Vasudha Hegde	Assoc.Professor, NMIT Bangalore	Coordinator	
8.	Ms. ArunaPrabha B S	Asst. Professor, NMIT, Bangalore	Member	
9.	Mr. V Parthasarathy	Asst. Professor. NMIT, Bangalore	Member	
10.	Ms. Sridevi H R	Asst. Professor, NMIT, Bangalore	Member	

Agenda:

i) Approval of Scheme for 2014-2018 batch.

ii) Approval of syllabus for III and IV Sem of 2014-2018 batch.

iii) Ratification of the syllabus of Control Systems-V Sem core, Power Electronics –V Sem core, Advanced Power Electronics-VI Sem program elective.

Minutes:

- Dr. Ravikumar H M welcomed all the members of BOS and briefly explained the structure of syllabus under autonomous scheme.
- Dr. V Krishnan brought out the changes made in the revised scheme and syllabus 2014-2018 batch.
- In the scheme, members wanted to know the syllabus of INNOVATIVE PRODUCT DESIGN & DEVELOPMENT / ROBOTICS subject as this is introduced in III Sem.
- Mr. Manjunath C suggested another industry oriented course as Industrial controllers and SCADA which may be included in VI Sem as program elective.
- Prof. VKM suggested controller design may be added as another elective in VI semester and it should have design of controllers like PI and PID.
- Mr. Babunarayanan suggested Smart grid as open elective in 7th semester.
- Prof. V Keshava Murthy suggested that Reactive power management and FACTS can be clubbed to form a single elective subject.
- Prof. V Keshava Murthy suggested that the total no. hours /week must be 4 for 4 credit subject(including the tutorial classes)
- It was also decided that Measurements and sensors subject may be titled as Measurements and Transducers the syllabus has to be included with units and dimensions along with the Magnetic measurements, earth resistance measurements, CVTs, DCCT, CT and PT applications, Power and energy measurement-electronic energy metes.
- Electric Circuits 4-0-0, to be changed, unbalanced to be dealt in detail – three phase unbalanced systems- all methods to be included- all types of load, measurement of unbalanced power.
- In Field Theory course, Engineering physics to be added as prerequisite, Quick field - Free ware may be down loaded for simulation.

- Simulation experiments can be added in Linear integrated circuits lab
- Applications of Artificial Neural networks in the area of Power systems can be introduced.
- Learning activities such as mini projects or seminars can be given in the subject Renewable energy sources.
- Energy Audit , Discrete Control systems and Pattern Recognition can be introduced as Open electives.
- Entrepreneurship development, management and IPR can be offered as Humanity subject.
- Students should be encouraged to learn Estimation and Costing.
- Hands on exposure on FPGA can be part of VLSI circuits and design.
- Power system protection lab may be renamed as Power system protection and industrial control lab.
- Automotive Electronics is made mandatory for students who are short listed in KPIT.
- Program Electives like AI applications to power systems and Reliability engineering can be offered.
- Dr. Ravikumar requested the BOS members to approve the syllabus for 3rd and 4th semester 2014-18 batch.
- However the draft scheme for 5th to 8th semester of 2014-18 batch was discussed by the BOS members.
- The syllabus for 5th to 8th semester of 2014-18 batch could be taken up for review in the next BOS meeting.
- The external BOS members suggested to consider one standard text book for framing the syllabus and setting the SEE Question paper.

(HOD EEE)

- In Mathematics-III and Mathematics-IV no. of hours should be changed to 52hrs from 48hrs.
- Electric Circuits 4-0-0, to be changed, three phase balanced can be removed – review, unbalanced to be dealt in detail – three phase unbalanced systems- all methods to be included- all types of load, measurement of unbalanced power.
- In DC and Synchronous Machines – Dynamics of Synchronous Machines may be added, refer to M.G Say. Review should be restricted to 2 hours.
- In Transformers and Induction motors course. Auto transformers, tap changing transformer (on line and off line). Ferroresonance and transformer energisation, Inrush current. Losses and efficiency under review, bushings are to be discussed. .In Induction motors, Double fed induction motor, induction generators, types of induction generators used in wind turbines.
- In Field Theory course, Engineering physics to be added as prerequisite , Quick field -Free ware may be down loaded for simulation .
- Dr. pradipKumar Dixit suggested that it has to be Maxwell's 1st equation and Unit-IV needs clarity. And also with Equation continuity –boundary condition in 2nd unit.
- Dr H M Ravikumar suggested to include a new subject Project Management and Finance for 5th semester as Program Elective.
- The syllabus of Control Systems-V Sem core, Power Electronics –V Sem core, Advanced Power Electronics-VI Sem program elective were accepted for ratification with the suggested changes.
- Dr.V Krishnan suggested that program elective subject on biological sciences - Biosensors and Instrumentation is to be included in VII Sem as per the NBA committee suggestions.
- The syllabus of Control Systems-V Sem core, Power Electronics-V Sem core, Advanced Power Electronics-VI Sem program elective were accepted for ratification with the suggested changes.
- The Members for BOS-2015-16, BOE-2015-16 and panel of Examiners-2015-2016 was approved.
- The meeting was concluded with vote of thanks by Dr. Ravikumar H M to all the members for valuable inputs towards the revision of the syllabus.

Action Taken Report

1) The industry oriented subject industrial controllers and SCADA, smart grid will be offered as elective for the batch of 2014 admitted students.
2) Controller design will add in control system course for the batch of 2014 admitted students
3) Measurements and Sensors (14EE36) subject is titled as measurements and transducers and the syllabus includes units and dimensions along with the magnet measurements,

earth resistance measurements, CVTs, DCCT, CT and PT applications, Power and energy measurements- electronic energy meter

4) In electric circuits (14EE32) course, three phase unbalanced system is added.
5) In field theory (14EE45) engineering physics is added as prerequisite
6) Biosensors and Instrumentation (12EEE754) is added as Program Elective in 7th semester.
7) Project Management and Finance (14EEE562) is added as Program Elective for 5th semester.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MTECH - RENEWABLE ENERGY

1.2 Academic Flexibility

1.2.1 Percentage of new courses introduced of the total number of courses across all programs offered during the last five years

Name of the Course	Course Code	Year of Introduction
APPLIED MATHEMATICS	16MAT11	2016-17
ENERGY CONVERSION	16ERE12	2016-17
INSTRUMENTATION IN ENERGY SYSTEMS	16ERE13	2016-17
ENERGY SOURCES AND CONVERSION TECHNOLOGIES	16ERE14	2016-17
ENGINEERING THERMODYNAMICS (ONLY FOR STUDENTS WITH BE IN ELECTRICAL &ELECTRONICS ENGINEERING)	16ERE151	2016-17
POWER SYSTEM ENGINEERING(ONLY FOR STUDENTS WITH BE IN MECHANICAL ENGINEERING)	16ERE152	2016-17
ENERGY LABORATORY-I/MINI PROJECT	16ERE16	2016-17
TECHNICAL SEMINAR		2016-17
SOLAR PHOTOVOLTAIC SYSTEMS	16ERE21	2016-17
SOLAR THERMAL POWER PLANTS	16ERE22	2016-17
WIND ENERGY AND DESIGN ASPECTS	16ERE23	2016-17
ENERGY ECONOMICS AND POLICY	16ERE24	2016-17
ENERGY CONSERVATION AND MANAGEMENT	16ERE251	2016-17
ISSUES IN GRID INTEGRATION OF POWER FROM RENEWABLE ENERGY SOURCES	16ERE 252	2016-17
NONOMATERIAL'S FOR SOLAR APPLICATIONS	16ERE253	2016-17
ENERGY AND ENVIRONMENTAL ANALYSIS OF RENEWABLE ENERGY SYSTEMS	16ERE 254	2016-17
SMART GRID	16ERE 255	2016-17
INTELLIGENT TECHNIQUES	16ERE 256	2016-17
ENERGY LABORATORY-II /MINI PROJECT	16ERE26	2016-17
SEMINAR	16ERE27	2016-17

V. Ranganathan 2017/19

Signature of HOD
(Dr.V.Ranganathan)

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY, BANGALORE

(An Autonomous Institution under Visvesvaraya Technological University, Belgaum)

Department of Electrical and Electronics Engineering

PANEL OF BOARD OF STUDIES OF M.TECH RENEWABLE ENERGY ACADEMIC YEAR 2016-17

Sl.No	*NAME*	*Designation*	*Organization*	*ROLL*
1	Dr H M Ravikumar	HOD,EEE Dept,	NMIT	Chairperson
2	Dr H L Suresh	Professor, EEE dept	NMIT	PG Coordinator& Member
3	Mrs. Vasudha Hedge	Asso. Professor, EEE Dept,	NMIT	Member
4	Dr.A Manjunath	Principal	**Sri Krishna Institute of Technology** No.29, Hesaraghatta main Road Chikkabanavara, Bangalore-90	Academic expert
5	Mr. Rishabh Bhargava	Sr. Executive-Cell process Engineering and Technology	TATA POWER SOLAR	Industry Expert
6	Mr.Chandra Mouli Kumar,	Additional General Manager ,Cell Manufacturing & Technology	TATA POWER SOLAR	Industry Expert
7	Dr. Narendranath Udupa	Director and Department Head at Philips Lighting Research	**Philips India Limited**	Industry Expert
	Sri Mohan Kumar	Asst. General Manager	**KREDL**, Head office, 339,'Shanthigruha' Bharath Scouts & Guides Building, Palace Road,Bangalore560001	Industry Expert
8	Dr. Dattatraya N Gaonkar	Assistant Professor Department of E&EE,	**NITK**, Srinivasnagar,Surathkal, Mangalore-575025	Academic expert
9	Dr.SURESH. H. JANGAMSHETTI	Professor Department of E&EE,	**Basaveshwar Engineering College**, Bagalkot, Karnataka,	Academic expert

(APPROVED)

Dr H M Ravikumar

(HOD/EEE)

NITTE MEENAKSHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution Under Visvesvaraya Technological University, Belgaum)

YELAHANKA, BANGALORE

Department of Electrical and Electronics Engineering

Minutes of Meeting-PG (Renewable Energy)

BOS 2016 held on 28/09/2016

Members attended:

Sl.No.	Name with designation	Designation and organization	Position	Signature
1.	Dr. H M Ravikumar	HOD,EEE Dept. NMIT	Chairman	
2.	Dr. A Manjunath	SKIT, Bangalore	Member-academics	
3.	Mr. Rishabh Bhargava	TATA Power Solar	Member - Industry Expert	
4.	Mr. Chandra Mouli Kumar	TATA Power Solar	Member - Industry Expert	
4.	Dr. Suresh H L	Professor, MSRIT, Bangalore	Member – Academic	
7.	Ms. Vasudha Hegde	Assoc. Professor, NMIT Bangalore	Member – Academic	

Members absent:

Mr. Mohan Kumar: Asst. General Manager-KREDL-Bangalore-1

Agenda:

i. Vision and Mission of PG-RE
ii. Scheme and Syllabus of PG-RE

Minutes of the meeting:

1. Dr. Ravikumar welcomed all the members of BOS committee for the meeting.
2. Mr. Chandramouli has suggested the important key terms for Mission ,vision and PEOs of the course.
3. Dr. Manjunath A suggested the text books to have at latest 60 to 70% of the total syllabus.

4. Mr.Rishab suggested that in Energy conversion subject Solar topic is to be removed.

5. Applied mathematics – To check if simulation topics could be included.

6. Energy Conversion and Renewable energy sources may be combined.

7. Contemporary issues to be added in the following subjects:

a) Instrumentation in energy systems.

b) Solar Photovoltaic systems

c) Wind energy and design aspects.

d) Energy Economics and Policy.

8. Energy conservation and management, Issues in grid integration, Smart Grid , Nano materials for Solar applications, energy and environmental analysis and Intelligent techniques can be offered as elective subjects.

9. Energy sources and conversion technologies can have Geo thermal energy.

10. Dr. Manjunath suggested that the Power system engineering should contain introduction of types of conductors and insulators with the substation components.

11. Mr.Rishabh suggested that the order of subjects with code should be changed.

12. Design of Solar energy sytems may be removed as maximum topics are covered in the other subjects.

13. Mini project can be part of the laboratory course.

14. Only IEEE papers should be chosen for presenting in Technical Seminar.

(HOD EEE)