Board of Studies
file for
Academic Year 2025-26

ELECTRICAL AND ELECTRONICS ENGINEERING

For

B.Tech FOUR YEARS DEGREE PROGRAM

(Applicable for batches admitted from 2024-2025)

D.N.R.COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

(Approved by AICTE, New Delhi & Affiliated to JNTUK,Kakinada)

(Accredited with A^{++}Grade by NAAC & Accredited by NBA (B.Tech-CSE, ECE &EEE))

BALUSUMUDI,BHIMAVARAM,W.G.Dist.,A.P.,PIN-534 202

Ph:08816-221238,Email:dnrcet@gmail.com,Website:https://dnrcet.org

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Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada
Accredited with A++ Grade by NAAC & Accredited by NBA (B. TECH – CSE, ECE & EEE)
Ph: 08816-221238 Email: dnrcet@gmail.com website: https://dnrcet.org
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Ref: DNRCET/EEED/BOS/2024-25/Cir-2

Bhimavaram,
Dt: 22/03/25.

CIRCULAR

This is to inform to all the members that the 2nd Board of Studies (BOS) online meeting of the EEE Department, DNR College of Engineering & Technology, Bhimavaram(9P) will be held on 25/03/25, Tuesday at 10:30 AM in the Conference room, 1st floor of the administrative block for the A.Y:2025-26. All the BOS members are invited to attend the meeting. The link will be shared through mail or WhatsApp.

Agenda

1. **Welcome Speech by the Chairperson.**
2. **Introducing the members of the Board of Studies.**
3. **To discuss and finalize the proposed II B. Tech. I & II Semester Course structure and syllabus of DR-24 Regulations**
4. **Ratification of Course Objectives and Course Outcomes for the proposed Curriculum.**
5. **Finalization of Model Papers and List of Paper Setters.**
6. **Any other item with the permission of the chair.**

Member Secretary

Head of the Department & BOS Chairman

Copy To:

1. **The Members of the BOS**
2. **The Principal**
3. **The Dean(Acad)**
4. **The Office File**

22-3-2025

(G. Jagathy)

(I. Vijayakumar)

(Sivabalakrishnan)

(P. Nagarajan)

(D. Joseph Kumar)

(P. Revathi)

(T. V. Ree)

Gmail kappagantula subrahmanyam <kappagantulasubbu@gmail.com>

k.r

kappagantula subrahmanyam <kappagantulasubbu@gmail.com> Sat, Mar 22, 2025 at 1:37 PM
To: Surendra Kumar Thonta <surendrakumar800856@gmail.com>

Dear sir,
I am sending herewith the 2nd BOS invitation along with course structure, syllabus of 2-1 and 2-2 sem DR 24 regulations and model papers for your perusal.Kindly go through and do the needful.
I also request you to make it convenient for attending II BOS meeting through online on 25/03/25, Tuesday at 10.30AM. Your valuable suggestions will help us to enrich the career of the students.Kindly acknowledge the same.

Regards
Dr.KBVSR Subrahmanyam
Prof & Head, EEE Dept

3 attachments

Model Papers 2-1 & 2-2 sem.zip
1015K

EEE DR24 CURRICULAM 2-1 & 2-2 sem.pdf
2412K

II BOS invitation EEE dept DNRCET 3.pdf
79K

Gmail kappagantula subrahmanyam <kappagantulasubbu@gmail.com>

k.r

kappagantula subrahmanyam <kappagantulasubbu@gmail.com> Sat, Mar 22, 2025 at 1:44 PM
To: Pradeepkumar Sodadasi <pradeepkumar.sodadasi92@gmail.com>

Dear sir,
I am sending herewith the 2nd BOS invitation along with course structure, syllabus of 2-1 and 2-2 sem DR 24 regulations and model papers for your perusal.Kindly go through and do the needful.
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Regards
Dr.KBVSR Subrahmanyam
Prof & Head, EEE Dept

3 attachments

Model Papers 2-1 & 2-2 sem.zip
1015K

EEE DR24 CURRICULAM 2-1 & 2-2 sem.pdf
2412K

II BOS invitation EEE dept DNRCET 4.pdf
81K

Gmail kappagantula subrahmanyam <kappagantulasubbu@gmail.com>

k.r

kappagantula subrahmanyam <kappagantulasubbu@gmail.com> Sat, Mar 22, 2025 at 1:26 PM
To: ravikollu@jntucek.ac.in

Dear sir,
I am sending herewith the 2nd BOS invitation along with course structure, syllabus of 2-1 and 2-2 sem DR 24 regulations and model papers for your perusal.Kindly go through and do the needful.
I also request you to make it convenient for attending II BOS meeting through online on 25/03/25, Tuesday at 10.30AM. Your valuable suggestions will help us to enrich the career of the students.Kindly acknowledge the same.

Regards
Dr.KBVSR Subrahmanyam
Prof & Head, EEE Dept

3 attachments

II BOS invitation EEE dept DNRCET.pdf
79K

Model Papers 2-1 & 2-2 sem.zip
1015K

EEE DR24 CURRICULAM 2-1 & 2-2 sem.pdf
2412K

Gmail kappagantula subrahmanyam <kappagantulasubbu@gmail.com>

k.r

kappagantula subrahmanyam <kappagantulasubbu@gmail.com> Sat, Mar 22, 2025 at 1:32 PM
To: viceprincipal@svrec.ac.in

[Quoted text hidden]

3 attachments

- **Model Papers 2-1 & 2-2 sem.zip**
  1015K
- **EEE DR24 CURRICULAM 2-1 & 2-2 sem.pdf**
  2412K
- **II BOS invitation EEE dept DNRCET 1.pdf**
  80K

Gmail kappagantula subrahmanyam <kappagantulasubbu@gmail.com>

k.r

kappagantula subrahmanyam <kappagantulasubbu@gmail.com> Sat, Mar 22, 2025 at 1:34 PM
To: Mangipudi Siva Kumar <profsivakumar.m@gmail.com>

Dear sir,
I am sending herewith the 2nd BOS invitation along with course structure, syllabus of 2-1 and 2-2 sem DR 24 regulations and model papers for your perusal.Kindly go through and do the needful.
I also request you to make it convenient for attending II BOS meeting through online on 25/03/25, Tuesday at 10.30AM. Your valuable suggestions will help us to enrich the career of the students.Kindly acknowledge the same.

Regards
Dr.KBVSR Subrahmanyam
Prof & Head, EEE Dept

3 attachments

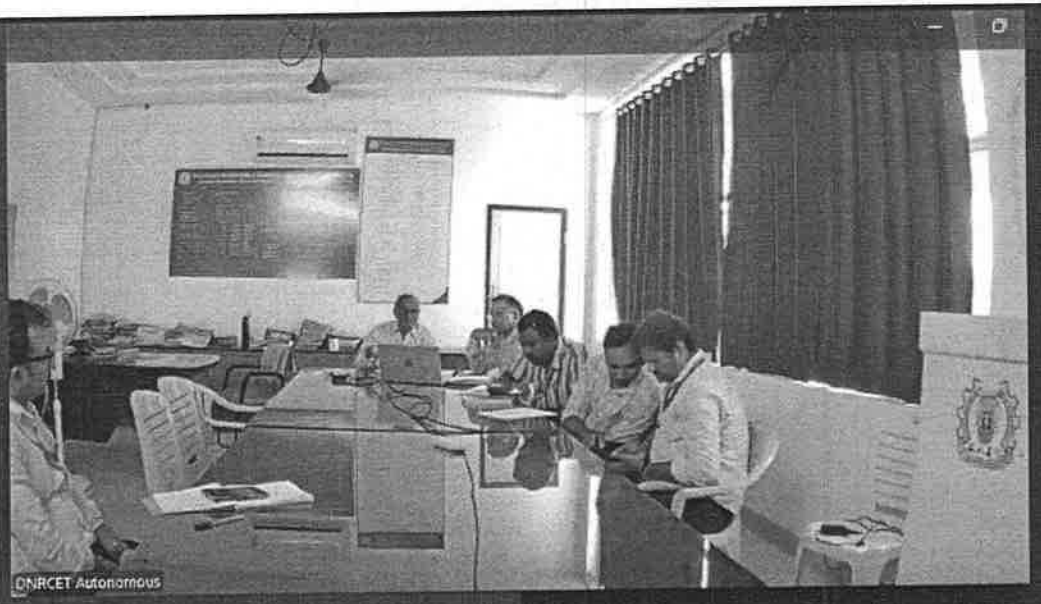
Model Papers 2-1 & 2-2 sem.zip
1015K

EEE DR24 CURRICULAM 2-1 & 2-2 sem.pdf
2412K

II BOS invitation EEE dept DNRCET 2.pdf
80K

Media Player

Dr P SANKAR BABU



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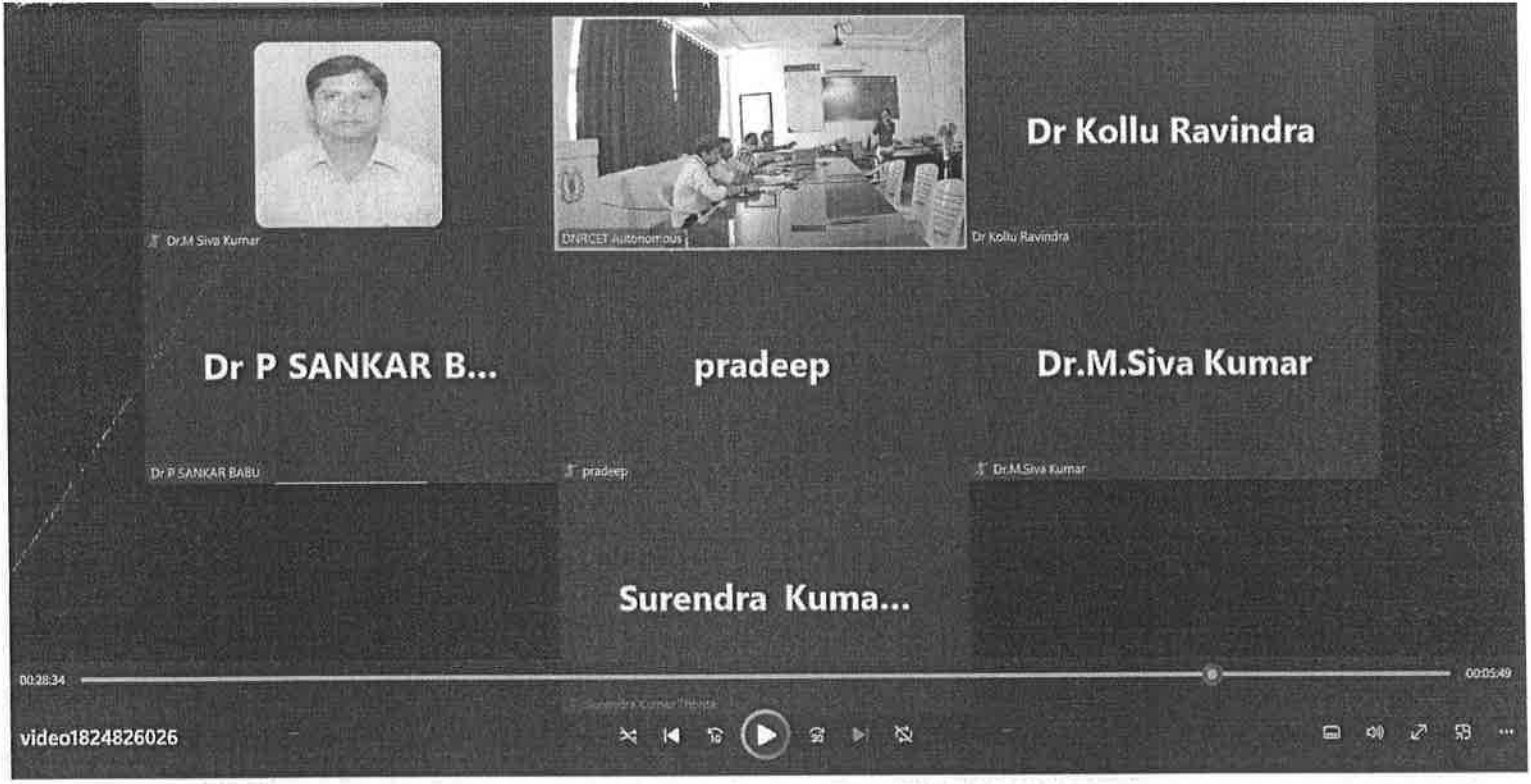
Dr.M Siva Kumar
DIVECET Autonomous
Dr Kollu Ravindra
Dr Kollu Ravindra
Dr P SANKAR B...
pradeep
Dr.M.Siva Kumar
Dr P SANKAR BABU
pradeep
Dr.M.Siva Kumar
Surendra Kuma...
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D.N.R. COLLEGE OF ENGINEERING & TECHNOLOGY

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Fax No : 08816 - 221236, Phones : 08816 - 221237, 38, E-mail : dnrcet@gmail.com., web : www.dnrcet.org

Ref: DNRCET/EEED/2024-25/BOS-MOM/2

Bhimavaram,
26/03/2025.

Minutes of Meeting (MOM) of the Board of Studies (BOS)
A.Y. 2025-26

The 2nd meeting of the Board of Studies (BoS) of the Electrical & Electronics Engineering (EEE) Department was held on 25-03-2025, Tuesday at 10:30 A.M in the Conference Room, 1st floor of Administrative Block in online mode (Zoom online meeting platform) to discuss the proposed agenda and to adopt resolutions.

Zoom Meeting Link:

https://us06web.zoom.us/j/2664871556?pwd=pFKnG7HYNLabpf3yYPHq0tnDoHPNdj.1&omn=87356007924

Agenda:

1. Welcome Speech by the Chairperson.
2. Introducing the members of the Board of Studies.
3. To discuss and finalize the proposed DR24 II B. Tech. I & II Semester Course structure and syllabus of DR24 Regulations
4. Ratification of Course Objectives and Course Outcomes for the Proposed Curriculum.
5. Finalization of Model Papers and List of Paper Setters.
6. Any other item with the permission of the chair.

The following members attended the meeting:

Name(s) of the Member(s)/Nominee(s)	Designation in Committee	Signature
Dr.KBVSR Subrahmanyam Professor & Head, Dept of EEE	Chairperson	
Dr.Kollu Ravindra Professor, EEE dept, JNTUK, Kakinada-533003, AP	Member (University Nominee)	
Dr.M.Siva Kumar Professor & Mentor, EEE Dept Gudlavalleru Engg College (Autonomous),Gudlavalleru-521356	Member (Subject experts from outside the parent University)	Attended online
Dr.Sankar Babu Potluri Professor, EEE Dept and Vice Principal SVR Engineering College (Autonomous),Nandyal-518502, AP	Member (Subject experts from outside the parent University)	Attended online

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Ph: 08816-221238 Email: dnrcet@gmail.com website: https://dnrcet.org
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Mr.S.Pradeep Kumar Assistant Executive Engineer, Maintenance,220KV SS Undi, and 220kV SS Akiveedu Substation,Bhimavaram-534202, AP	Member (Industrial Expert)	
Mr.T.Surendra Kuma**(Roll No.189P5A0223)** Batch:2017-21 Facility Engineer, Tata Communications Ltd, VSB, CFC-1, software units layout, Madhapur, Hyd-500081	Member (College alumni)	Attended online
1.Mr.M.Srinu, Asst.Prof, EEE dept	Member (Faculty in the Dept)	M.Srinu
2.Mr.P.Nagaraju, Asst.Prof, EEE dept	Member(Faculty in the Dept)	
3.Mr.D.Joseph Kumar, Asst.Prof, EEE dept	Member(Faculty in the Dept)	
4.Mr.T.Venkateswara Rao, Asst. Prof, EEE dept	Member(Faculty in the Dept)	
5.Ms.G.Naga Jyothi, Asst.Prof, EEE dept	Member(Faculty in the Dept)	
6.Mr. K.Siva sankar, Asst.Prof, EEE dept	Member(Faculty in the Dept)	
7.Mr.I.Vijay Kumar, Asst.Prof, EEE dept	Member(Faculty in the Dept)	
8.Mrs.P.Revathi, Asst.Prof, EEE dept	Member(Faculty in the Dept)	

At the onset of the meeting, the Principal of DNRCET expressed his gratitude to the university nominee and other members of BOS and handed over the session to the HOD of the EEE department & Chairman of BOS, Dr. KBVSR Subrahmanyam and the following resolutions were made in the IInd BOS meeting:

Resolutions:

Agenda Point- 1: Welcome speech by the chairperson

Resolution: The chairman of BOS, Dr. KBVSR Subrahmanyam, welcomed internal and external BOS members.

Agenda Point- 2: Introduction of members of the Board of Studies (BOS)

Resolution: The Chairman of BOS, Dr. KBVSR Subrahmanyam, welcomed all the members and introduced internal BOS members to external BOS members. The meeting began with the B.Tech II Year curriculum presentation for semesters I & II.

Agenda Point-3: To discuss and finalize the proposed II B. Tech. I & II Semester EEE (Theory and Lab) courses of DR24 Regulations.

Resolution: After clearly discussing the curriculum of B.Tech 2-1 and 2-2 semesters, the university nominee and all other BOS members opined to modify the syllabus of the proposed II B. Tech. I & II Semester courses of DR24 Regulations for Control Systems and Induction & Synchronous Machines

theory courses and Control Systems lab, Induction & Synchronous Machines Lab of 2-2 sem. Accordingly, few modifications were done and BOS has approved the syllabi for DR24 regulations, and the modification details are mentioned below: **(Enclosed Annexure-A).**

- For the Control Systems theory course in 2-2 sem, the BOS members suggested splitting Unit-2 into 2 Units, namely Unit-2 and Unit-3, and removing Unit-5. Accordingly, Unit-3 becomes Unit-4 and Unit-4 becomes Unit-5.
- For the Induction & Synchronous Machines theory course, in Unit -4, the topic "Potier Triangle method" has been removed.
- For the Control Systems Lab in 2-2 sem, the 12th experiment has been removed from the JNTUK syllabus and it is suggested to keep a new experiment. The same has been done, and a total of 12 experiments exist.
- For the Induction and Synchronous Machines lab in 2-2 sem, the 8th and 12th experiments have been removed, the 7th experiment has been split into 2 experiments, and a total of 12 experiments exist, out of which 10 are to be performed.

The rest of the syllabus for the remaining courses in the 2-1 and 2-2 semesters curriculum will be followed as per the JNTUK curriculum (R23).

Agenda Point- 4: Ratification of Course Objectives and Course Outcomes for the proposed curriculum.
Resolution: After a thorough discussion, the BOS members suggested to keep 5 COs or 6 COs for better CO-PO mapping keeping in mind blooms levels and approved the course objectives and course outcomes for the proposed courses based on the modifications made to the theory and labs as discussed in agenda point -3.

Agenda Point- 5: Finalization of Model Papers and List of Paper Setters
Resolution: BOS members verified Bloom's Taxonomy levels and marks distribution in the proposed model Question papers for external examinations of theory courses and ratified. The BoS members also approved the list of paper setters for B.Tech I & II semester courses with no changes.**(Enclosed Annexure –B).**

Agenda Point- 6: Any other item with the permission of the chairman, BOS.
Resolution: A community service project (CSP) was discussed, and all the BOS members suggested following the JNTUK guidelines, which is to be done after the external exams of 2-2 sem (DR24).

Finally, the Chairman summarized all the agenda and resolutions, thanked all the BOS members for their kind cooperation, and ended with a Vote of Thanks.

Note: The entire BOS meeting discussions are recorded in the Zoom platform and stored in the EEE Department.

S. PRADEEP KUMAR
AEE/ APTRANSCO.

Chairman, BOS
Dr. K.B.V.S.R. Subrahmanyam
M.E., Ph.D., MISTE, [illegible]
Professor & Head, EEE Department
D.N.R. College of Engg. & Technology (Auto[illegible]
Balusumudi, BHIMAVARAM-534 202

D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY
AUTONOMOUS
ELECTRICAL AND ELECTRONICS ENGINEERING
(DR24 -II[nd Year] COURSE STRUCTURE & S YLLABUS)

B.Tec. II Year-I Semester

S.No	Category	Course code	Title	L	T	P	C
1	BS	BT24BS2102	Complex Variables & Numerical Methods	3	0	0	3
2	HSMC	BT24HS2101	Universal human values – understanding harmony and Ethical human conduct	2	1	0	3
3	Engineering Science	BT24EE2101	Electromagnetic Field Theory	3	0	0	3
4	Professional Core	BT24EE2102	Electrical Circuit Analysis-II	3	0	0	3
5	Professional Core	BT24EE2103	DC Machines &Transformers	3	0	0	3
6	Professional Core	BT24EE2104	Electrical Circuit Analysis-II And Simulation Lab	0	0	3	1.5
7	Professional Core	BT24EE2105	DC Machines &Transformers Lab	0	0	3	1.5
8	Skill Enhancement Course	BT24CS2106	Data Structures Lab	0	1	2	2
9	Audit Course	BT24BS2106	Environmental Science	2	0	0	-
		Total		**15**	**2**	**10**	**20**

B.Tech. II Year-II Semester

S.No	Category	Course code	Title	L	T	P	C
1	Management Course-I	BT24HS2201	Managerial Economics & Financial Analysis	2	0	0	2
2	Engineering Science/Basic Science	BT24EC2207	Analog Circuits	3	0	0	3
3	Professional Core	BT24EE2201	Power Systems-I	3	0	0	3
4	Professional Core	BT24EE2202	Induction and Synchronous Machines	3	0	0	3
5	Professional Core	BT24EE2203	Control Systems	3	0	0	3
6	Professional Core	BT24EE2204	Induction and Synchronous Machines Lab	0	0	3	1.5
7	Professional Core	BT24EE2205	Control Systems Lab	0	0	3	1.5
8	Skill Enhancement course	BT24CS2207	Python Programming Lab	0	1	2	2
9	Engineering Science	BT24ME2207	Design Thinking &Innovation	1	0	2	2
			Total	**15**	**1**	**10**	**21**

	D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY AUTONOMOUS ELECTRICAL AND ELECTRONICS ENGINEERING (DR24-II[nd] YEAR I SEM COURSE STRUCTURE & SYLLABUS)

II Year I Semester	Course Code : BT24EE2101	L	T	P	C
		3	0	0	3
ELECTRO MAGNETIC FIELD THEORY					

Pre-requisite: Concepts of Differential Equations, Vector Calculus and Electrical Circuit Analysis.

Course Objectives:

- To study the production of electric field and potentials due to different configurations of static charges.
- To study the properties of conductors and dielectrics, calculate the capacitance of different configurations. Understand the concept of conduction and convection current densities.
- To study the magnetic fields produced by currents in different configurations, Application of Ampere's law and the Maxwell's second and third equations.
- To study the magnetic force and torque through Lorentz force equation in magnetic field environment like conductors and other current loops.
- To develop the concept of self and mutual inductances and the energy stored.
- To study time varying and Maxwell's equations in different forms and Maxwell's fourth equation for the induced EMF.

Course Outcomes: At the end of the course, student will be able to,

CO1: Compute electric fields and potentials using Gauss law.
CO2. Solve Poisson's Laplace's or equations for various electric charge distributions
CO3: Analyse the behavior of conductors in electric fields, electric dipole and the capacitance and Energy stored in dielectrics.
CO4: Calculate the magnetic field intensity due to current carrying conductor and understanding the application of Ampere's law, Maxwell's second and third law.
CO5: Estimate self and mutual inductances and the energy stored in the magnetic field.
CO6: Understand the concepts of Faraday's laws, Displacement current, Poynting theorem and Poynting vector.

UNIT-I Vector Analysis:

Vector Algebra: Scalars and Vectors, Unit vector, Vector addition and subtraction, Position and distance vectors, Vector multiplication, Components of a vector.

Coordinate Systems: Rectangular, Cylindrical and Spherical coordinate systems.

Vector Calculus: Differential length, Area and Volume. Del operator, Gradient of a scalar, Divergence of a vector and Divergence theorem (definition only).Curl of a vector and Stoke's theorem (definition only), Laplacian of a scalar

Electrostatics:

Coulomb's law and Electric field intensity (EFI) –EFI due to Continuous charge distributions (line and surface charge), Electric flux density, Gauss's law (Maxwell's first equation, $\nabla . \vec{D} = \rho_v$), Applications of Gauss's law, Electric Potential, Work done in moving a point charge in an electro static field (second Maxwell's equation for static electric fields, $\nabla \times \vec{E} = 0$), Potential gradient, Laplace's and Poison's equations.

UNIT-II

Conductors–Dielectrics and Capacitance:

behavior of conductor in Electric field, Electric dipole and dipole moment–Potential and EFI due to an electric dipole, Torque on an Electric dipole placed in an electric field, Current density-conduction and convection current densities, Ohm's law in point form, behavior of conductors in an electric field, Polarization, dielectric constant and strength, Continuity equation and relaxation time, Boundary conditions between conductor to dielectric, dielectric to dielectric and conductor to free space, Capacitance of parallel plate, coaxial and spherical capacitors, Energy stored and density in a static electric field.

UNIT-III

Magneto statics, Ampere's Law and Force in magnetic fields:

Biot-Savart's law and its applications viz. Straight current carrying filament, circular, square, rectangle and solenoid current carrying wire – Magnetic flux density and Maxwell's second Equation ($\nabla . \bar{B}\rightarrow=0$), Ampere's circuital law and its applications viz. MFI due to an infinite sheet, long filament, solenoid, toroidal current carrying conductor, point form of Ampere's circuital law, Maxwell's third equation ($\nabla \times \bar{H}\rightarrow=\rightarrow J$). Magnetic force, moving charges in a magnetic field– Lorentz force equation, force on a current element in a magnetic field, force on a straight and a long current carrying conductor in a magnetic field, force between two straight long and parallel current carrying conductors, Magnetic dipole, Magnetic torque, and moment.

UNIT-IV

Self and mutual inductance:

Self and mutual inductance – determination of self-inductance of a solenoid, toroid, coaxial cable and mutual inductance between a straight long wire and a square loop wire in the same plane – Energy stored and energy density in a magnetic field.

UNIT-V

Time Varying Fields:

Faraday's laws of electromagnetic induction, Maxwell's fourth equation ($\nabla \times \bar{E}\rightarrow=-\frac{\partial B}{\partial T}$), integral and point forms of Maxwell's equations, statically and dynamically induced EMF, Displacement current, Modification of Maxwell's equations for time varying fields, Poynting theorem and Poynting Vector.

Textbooks:

1. "Elements of Electromagnetic "by Matthew NO Sadiku,Oxford 7th Publications, 7TH edition, 2018.
2. "Engineering Electromagnetic" by William H. Hayt & John. A. Buck Mc. Graw-Hill,7th Editon.2006.

Reference Books:

1. "Introduction to Electro Dynamics" by DJ Griffiths, Prentice-Hall of India Pvt. Ltd, 2nd edition.
2. "Electromagnetic Field Theory "by Yaduvir Singh, Pearson India,1st edition,2011.
3. "Fundamentals of Engineering Electromagnetic s" by Sunil Bhooshan,Oxford University Press ,2012.
4. Schaum's Outline of Electromagnetic by Joseph A.Edminister, Mahamood Navi,4th Edition,2014.

Online Learning Resources:

1. https://archive.nptel.ac.in/courses/108/106/108106073/
2. https://nptel.ac.in/courses/117103065

	D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY AUTONOMOUS ELECTRICAL AND ELECTRONICS ENGINEERING (DR24-II[nd] YEAR I SEM COURSE STRUCTURE & SYLLABUS)

II Year I Semester	Course Code : BT24EE2102	L	T	P	C
		3	0	0	3
ELECTRICALCIRCUITANALYSIS-II					

Pre-requisite: Analysis of DC and Single phase AC Circuits, Concepts of differentiation and integration.

Course Objectives:

- To understand three phase circuits
- To analyse transients in electrical systems
- To evaluate network parameters of given electrical network
- To apply Fourier analysis to electrical systems
- To understand graph theory for circuit analysis and to understand the behavior of filters

Course Outcomes:

At the end of the course, student will be able to,

CO1: Analyse the balanced and unbalanced 3 phase circuits for power calculations.

CO2: Apply the shifting theorem to evaluate Laplace transforms for functions that involve time shifts, both for time shifting and frequency shifting

CO3: Analyse the transient behavior of electrical networks in different domains.

CO4: Estimate various Network parameters.

CO5: Apply the concept of Fourier series to electrical systems.

CO6: Analyse the filter circuit for electrical circuits.

UNIT-I

Analysis of three phase balanced circuits: Phase sequence, star and delta connection of sources and loads, relation between line and phase quantities, analysis of balanced three phase circuits, measurement of active and reactive power. Analysis of three phase unbalanced circuits: Loop method, Star-Delta transformation technique, two-wattmeter method for measurement of three phase power.

UNIT–II

Laplace transforms – Definition and Laplace transforms of standard functions– Shifting theorem– Transforms of derivatives and integrals, Inverse Laplace transforms and applications.

Transient Analysis: Transient response of R-L, R-C and R-L-C circuits (Series and parallel combinations) for D.C. and sinusoidal excitations – Initial conditions - Solution using differential equation approach and Laplace transform approach.

UNIT-III

Network Parameters: Impedance parameters, Admittance parameters, Hybrid parameters, Transmission (ABCD) parameters, conversion of Parameters from one form to other, Conditions for Reciprocity and Symmetry, Interconnection of Two Port networks in Series, Parallel and Cascaded configurations- problems.

UNIT-IV

Analysis of Electric Circuits with Periodic Excitation: Fourier series and evaluation of Fourier coefficients, Trigonometric and complex Fourier series for periodic waveforms, Application to Electrical Systems – Effective value and average value of non-sinusoidal periodic waveforms, power factor, effect of harmonics

UNIT-V

Filters: Classification of filters-Low pass, High pass, Band pass and Band Elimination filters, Constant-k filters -Low pass and High Pass, Design of Filters.

Textbooks:

- Engineering Circuit Analysis, William Hayt andJackE.Kemmerly,8thEdition McGraw-Hill, 2013
- Fundamentals of Electric Circuits,CharlesK.Alexander,MathewN.O.Sadiku,3rd Edition, Tata McGraw-Hill, 2019

Reference Books:

1. Network Analysis, M.E.VanValkenburg, 3rd Edition,PHI,2019.
2. Network Theory, N. C. Jagan and C. Lakshmi narayana, 1st Edition, B. S. Publications, 2012.
3. Circuits and Networks Analysis and Synthesis,A.Sudhakar,Shyam MohanS.Palli, 5th Edition, Tata McGraw-Hill, 2017.
4. Engineering Network Analysis and Filter Design (Including Synthesis of One Port Networks)-Durgesh C. Kulshreshtha Gopal G. Bhise, Prem R. Chadha ,Umesh Publications 2012.
5. Circuit Theory: Analysis and Synthesis, A. Chakrabarti, Dhanpat Rai & Co., 2018, 7th Revised Edition.

Online Learning Resources:

1. https://archive.nptel.ac.in/courses/117/106/117106108/
2. https://archive.nptel.ac.in/courses/108/105/108105159/

	D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY AUTONOMOUS ELECTRICAL AND ELECTRONICS ENGINEERING (DR24-II[nd] YEAR I SEM COURSE STRUCTURE & SYLLABUS)

II Year I Semester	Course Code : BT24EE2103	L	T	P	C
		3	0	0	3
DC MACHINES & TRANSFORMERS					

Pre-requisite: Principles of Electro mechanical Energy Conversion, Electromagnetic fields and Electrical Circuit Analysis.

Course Objectives:

Students will get exposure to

- Understand the characteristics and applications of DC Machines.
- Develop problem solving skills about the starting, speed control and testing of DC Machines.
- Understand the concepts of efficiency and regulation of a transformer by obtaining equivalent circuit.
- Analyze the performance of single-phase transformers and to understand the connection diagrams of three-phase transformers.

Course Outcomes:

At the end of the course, the student should be able to:

CO1. Analyze different excitation techniques used in DC machines and their effects on Performance.

CO2.Analyze and compare the characteristics of separately-excited, shunt, series, and compound DC motors, including their speed-torque curves and applications.

CO3.Operate the DC Motor with different speed control and testing methods.

CO4.Analyze transformer performance under various loads, including lagging, leading, and unity Power factor loads.

CO5. Know about the transformer testing methods for testing of transformer.

CO6.Analyze the different poly phase connections used in transformers.

UNIT-I: DC Generators:

Construction and principle of operation of DC machines – EMF equation for generator – Excitation techniques–characteristics of DC generators–applications of DC Generators, Back- emf and torque equations of DC motor – Armature reaction and commutation.

UNIT–II: Starting, Speed Control and Testing of DC Machines

Characteristics of DC motors–losses and efficiency–applications of DC motors. Necessity of a starter – starting by 3-point and 4-point starters – speed control by armature voltage and field current control – testing of DC machines – brake test, Swinburne's test –Hopkinson's test–Field Test.

UNIT–III: Single-phase Transformers

Introduction to single-phase Transformers (Construction and principle of operation)–emf equation – operation on no-load and on load –lagging, leading and unity power factors loads –phasor diagrams– equivalent circuit–regulation–losses and efficiency–effect of variation of frequency and supply voltage on losses – all day efficiency.

UNIT–IV: Testing of Transformers

Open Circuit and Short Circuit tests – Sumpner's test – separation of losses— Parallel operation with equal and unequal voltage ratios– auto transformer – equivalent circuit – comparison with two winding transformers.

UNIT–V

Three-Phase Transformers:

Poly phase connections- Y/Y, Y/Δ, Δ/Y, Δ/Δ, open Δ and Vector groups – third harmonics in phase voltages– Parallel operation–three winding transformers- transients in switching –off load and on load tap changers–Scott connection.

Textbooks:

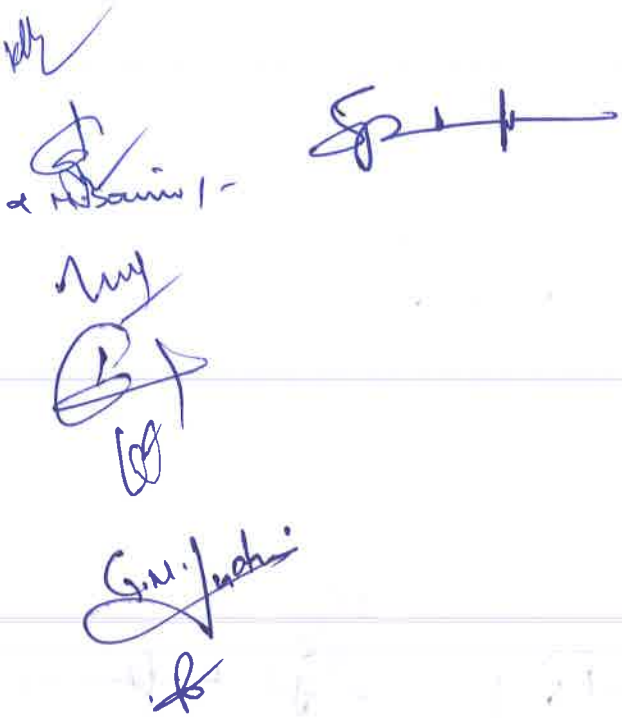
1. Electrical Machinery by Dr.PS Bimbhra, 7th edition, Hanna Publishers, New Delhi, 1995.
2. Performance and analysis of AC machines by M.G.Say, CBS, 2002.

Reference Books:

1. Electrical Machines by D. P.Kothari, I .J .Nagarth, McGraw Hill Publications, 5th edition
2. Electrical Machinery Fundamentals by Stephen J Chapman McGraw Hill education 2011.
3. Generalized Theory of Electrical Machines by Dr.PS Bimbhra,7thEdition, Khanna Publishers, 2021.
4. Theory & Performance of Electrical Machines by J.B. Gupta, Sons, S.K.Kataria & 2007.
5. Electric Machinery by Fitzgerald, A.E.,Kingsley,Jr.,C.,&Umans,S.D,7th Edition, McGraw-Hill Education, 2014.

Online Learning Resources:

1. nptel.ac.in/courses/108/105/108105112
2. nptel.ac.in/courses/108/105/108105155



	D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY **AUTONOMOUS** **ELECTRICAL AND ELECTRONICS ENGINEERING** **(DR24-IInd YEAR I SEM COURSE STRUCTURE & SYLLABUS)**

II Year I Semester	Course Code : BT24EE2104	L	T	P	C
		0	0	3	1.5
ELECTRICAL CIRCUIT ANALYSIS-II AND SIMULATION LAB					

Course Objectives:

- To measure three phase Active and Reactive power
- To analyse transient behaviour of circuits
- To determine 2-port network parameters
- To analyse electrical circuits using simulation tools

Course Outcomes:

At the end of the course, student will be able to,

CO1: Understand the power calculations in three phase circuits.

CO2: Evaluate the time response of given network.

CO3: Evaluate two port network parameters.

CO4: Apply KCL and KVL to solve real-world electrical circuit problems

CO5: Understand the interrelationship between inductors and their impact on overall circuit behavior.

CO6: Simulate and analyse electrical circuits using suitable software.

List of Experiments

Any 10 of the following experiments are to be conducted:

1. Measurement of Active Power and Reactive Power for balanced loads.
2. Measurement of Active Power and Reactive Power for unbalanced loads.
3. Determination of Z and Y parameters.
4. Determination of ABCD and hybrid parameters
5. Verification of Kirchhoff's current law and voltage law using simulation tools.
6. Verification of mesh and nodal analysis using simulation tools.
7. Verification of super Position and maximum power transfer theorems using simulation tools.
8. Verification of Reciprocity and Compensation theorems using simulation tools.
9. Verification of Thevenin's and Norton's theorems using simulation tools.
10. Verification of series and parallel resonance using simulation tools.
11. Simulation and analysis of transient response of RL, RC and RLC circuits.
12. Verification of self inductance and mutual inductance by using simulation tools.

II Year I Semester	Course Code : BT24EE2105	L	T	P	C
		0	0	3	1.5
DC MACHINES & TRANSFORMERS LAB					

Course Objectives:

The objectives of this course is

- To conduct the experiment and plot the characteristics and applications of DC machines.
- To perform the starting, speed control and testing methods of DC Machines.
- To determine/Predetermine efficiency and regulation of the transformer through equivalent circuit.

Course Outcomes: At the end of the course, the student will be able to,

CO1. Analyze the load characteristics of a DC shunt, series and DC compound generator
CO2. Analyze the factors that influence the efficiency of DC machines and identify ways to improve their overall performance.
CO3. Analyze the obtained data to plot the torque-speed characteristic curve of the motor, illustrating the relationship between torque and speed at different load conditions.
CO4.Evaluate the performance and limitations of DC shunt motors under both field and armature Control methods for specific speed control requirements
CO5. Apply concepts of efficiency and regulation to determine the transformer's performance and evaluate its energy conversion capabilities under different load conditions.
CO6. Analyze the impact of load on the transformer's performance, including voltage regulation and losses, and identify its operating characteristics under different loading conditions.

List of Experiments

Any 10 of the following experiments are to be conducted:

1. Speed control of DC shunt motor by Field Current and Armature Voltage Control.
2. Brake test on DC shunt motor-Determination of performance curves.
3. Swinburne's test-Pre determination of efficiencies as DC Generator and Motor.
4. Hopkinson's test on DC shunts Machines.
5. Load test on DC compound generator-Determination of characteristics.
6. Load test on DC shunt generator-Determination of characteristics.
7. Fields test on DC series machines-Determination of efficiency.
8. Brake test on DC compound motor-Determination of performance curves.
9. OC & SC tests on single phase transformer.
10. Sumpner's test on single phase transformer.
11. Scott connection of transformers.
12. Parallel operation of Single-phase Transformers.
13. Separation of core losses of a single-phase transformer.

Online Learning Resources:

1. https://ems-iitr.vlabs.ac.in/List%20of%20experiments.html

	D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY AUTONOMOUS ELECTRICAL AND ELECTRONICS ENGINEERING (DR24-II[nd] YEAR II SEM COURSE STRUCTURE & SYLLABUS)

II Year II Semester	Course Code : BT24EE2201	L	T	P	C
		3	0	0	3
POWER SYSTEMS-I					

Pre-requisite: Electrical Circuit Analysis

Course Objectives:

- To study principle of operation of different components of a hydro and thermal power stations.
- To study principle of operation of different components of a nuclear power stations.
- To study constructional and operation of different components of an Air and Gas Insulated substations.
- To study different types of cables and distribution systems.
- To study different types of load curves and tariffs applicable to consumers.

Course Outcomes:

At the end of the course, the student will be able to,

CO1. Identify various types of power generation systems and components of respective power stations.
CO2. Outline the principle of operation of a Nuclear power station.
CO3. Compare AIS and GIS in various aspects
CO4. Apply the knowledge of comparing various bus bar arrangements in substations
CO5. Explain the construction of different types of cables and distribution systems
CO6. Analyze different methods of power generation and tariffs

Unit I:

Hydroelectric Power Stations:

Selection of site, general layout of a hydroelectric power plant with brief description of major components and principle of operation

Thermal Power Stations:

Selection of site, general layout of a thermal power plant. Brief description of components: boilers, super heaters, economizers and electrostatic precipitators, steam Turbines: impulse and reaction turbines, condensers, feed water circuit, cooling towers and chimney.

Unit II:

Nuclear Power Stations:

Location of nuclear power plant, working principle, nuclear fission, nuclear fuels, nuclear chain reaction, nuclear reactor components: moderators, control rods, reflectors and coolants, types of nuclear reactors and brief description of PWR, BWR and FBR. Radiation: radiation hazards and shielding, nuclear waste disposal.

Unit III:

Substations:

Air Insulated Substations – indoor & outdoor substations, substations layouts of 33/11 kV showing the location of all the substation equipment. Bus bar arrangements in the sub-stations: simple arrangements like single bus bar, sectionalized single bus bar, double bus bar with one and two circuit breaker, main and transfer bus bar system with relevant diagrams.

Gas Insulated Substations (GSI) – advantages of gas insulated substations, constructional aspects of GIS, comparison of air insulated substations and gas insulated substations.

Unit IV:

Underground Cables:

Types of cables, construction, types of insulating materials, calculation of insulation resistance, stress in insulation and power factor of cable. Capacitance of single and 3-Core belted Cables.

Grading of cables: capacitance grading and inter sheath grading.

Distribution Systems:

Classification of Distribution systems, A.C Distribution, Overhead versus Underground system, Connection schemes of Distribution system, Requirements of Distribution system, requirements of a Distribution system, Design Considerations in Distribution system.

UNITV: Economic Aspects & Tariff:-

Economic Aspects -load curve, load duration and integrated load duration curves, discussion on Economic aspects: connected load, maximum demand, demand factor, load factor, diversity factor, Plant capacity factor and plant use factor, base and peak load plants.

Tariff Methods–Costs of generation and their division into fixed, semi-fixe and running Costs, desirable characteristics of a tariff method, tariff methods: simple rate, flat rate, block-rate, two- part, three–part, and power factor tariff methods.

Text Books:

1. S. N. Singh, Electric Power Generation, Transmission and Distribution, PHI Learning Pvt Ltd, New Delhi, 2nd Edition, 2010
2. J.B.Gupta,Transmission and Distribution of Electrical Power,S.K.Kataria and sons,10th Edition, 2012

Reference Books:

1. I.J. Nagarath & D.P.Kothari, Power System Engineering, McGraw-Hill Education, 3rd Edition, 2019.
2. C.L. Wadhwa, Generation, Distribution and Utilization of Electrical Energy, New Age International Publishers, 6th Edition, 2018.
3. V.K.Mehta and Rohit Mehta, Principles of Power System, S .Chan 2005.4th edition ,2005
4. Turan Gonen, Electric Power Distribution System Engineering, McGraw Hill, 1985.
5. Hand book of switchgear, BHEL, McGraw-Hill Education, 2007.

Online Learning Resources:

1. https://nptel.ac.in/courses/108102047

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ELECTRICAL AND ELECTRONICS ENGINEERING
(DR24-II[nd] YEAR II SEM COURSE STRUCTURE & SYLLABUS)

II Year II Semester	Course Code : BT24EE2202	L	T	P	C
		3	0	0	3
INDUCTION AND SYNCHRONOUS MACHINES					

Pre-requisite: Principles of Electromechanical Energy Conversion, Electromagnetic fields and Electrical Circuit Analysis.

Course Objectives:

Students will get exposure to understand the concepts of

- characteristics, starting and testing methods of Induction Motor
- Torque production and performance of Induction Motor.
- In determining the performance parameters of Induction Motor.
- Working of synchronous machines

Course Outcomes: At the end of the course, the student will be able to,

CO1: Explain the construction and operation of three-phase induction motor.

CO2: Analyse the performance of three-phase induction motor.

CO3: Explain the response of a three-phase induction motor

CO4: Describe the working of single-phase induction motors.

CO5: Analyse the construction and performance of Synchronous generators.

CO6: Analyse the performance of Synchronous motors.

UNIT-I:

3-phase induction motors: Construction of Squirrel cage and Slip ring induction motors– production of rotating magnetic field–principle of operation– rotor emf and rotor frequency –rotor current and power factor at standstill and during running conditions–rotor power input, rotor copper loss and mechanical power developed and their inter-relationship–equivalent circuit – phasor diagram

UNIT-II: Performance of 3-Phase induction motors:

Torque equation–expressions for maximum torque and starting torque–torque- slip -characteristics–double cage and deep bar rotors –No load, Brake test and Blocked rotor tests circle diagram for predetermination of performance –methods of starting– starting current and torque calculations –speed control of induction motor with V/f control method, rotor Resistance control and rotor emf injection technique– crawling and cogging induction generator operation.

UNIT–III: Single Phase Motors:

Single phase induction motors–constructional features–double revolving field theory, Cross field theory – equivalent circuit-starting methods: capacitor start capacitor run, capacitor start induction run, split phase & shaded pole. AC series motor.

UNIT–IV: Synchronous Generator:

Constructional features of non-salient and salient pole type alternators- armature windings – distributed and concentrated windings – distribution & pitch factors – E.M.F equation –armature reaction–voltage regulation by synchronous impedance method – MMF method –two reaction analysis of salient pole machines methods of synchronization - Slip test – Parallel operation of alternators.

UNIT–V: Synchronous Motor

Synchronous motor principle and theory of operation – Effect of excitation on current and power factor– synchronous condenser –expression for power developed –hunting and its suppression – methods of starting.

Text Books:

1. Electrical Machinery, Dr. P.S. Bhimbra, Khanna Publishing, 2021, First Edition.
2. Performance and analysis of AC machines by M.G.Say , CBS, 2002.

Reference Books:

1. Electrical machines, D.P. Kothari and I.J. Nagrath, McGraw Hill Education, 2017, Fifth Edition.
2. Theory & Performance of Electrical Machines by J.B. Gupta, S.K.Kataria & Sons, 2007.
3. Electric Machinery, A.E. Fitzgerald, Charles king sley, Stephen D. Umans, Mc Graw-Hill, 2020, Seventh edition.

Online Learning Resources:

1. nptel.ac.in/courses/108/105/108105131
2. https://nptel.ac.in/courses/108106072

II Year II Semester	Course Code : BT24EE2203	L	T	P	C
		3	0	0	3
CONTROLSYSTEMS					

Pre-requisite: Basic Engineering Mathematics

Course Objectives:

- To obtain the mathematical models of physical systems and derive transfer function.
- To determine the time response of systems and analyse system stability.
- To analyse system stability using frequency response methods.
- To design compensators using Bode diagrams.

Course Outcomes:

At the end of the course, the student will be able to,

CO1: Derive the transfer function of physical systems and determine overall transfer function using block diagram algebra and signal flow graphs.

CO2: Obtain the time response of first and specifications of second order systems and determine error constants.

CO3: Analyze the absolute and relative stability of LTI systems using Routh's stability criterion.

CO4: Analyze the absolute and relative stability of LTI systems using root locus method.

CO5: Analyze the stability of LTI systems using frequency response methods.

CO6: Design Lag, Lead, Lag-Lead compensators to improve system performance using Bode Diagrams.

UNIT-1

Mathematical Modeling of Control Systems

Classification of control systems - open loop and closed loop control systems and their differences- Feedback characteristics –transfer function of linear system, differential equations of electrical networks- translational and rotational mechanical systems -transfer function of Armature voltage controlled DC servomotor-block diagram algebra–Representation by signal flow graph–reduction using Mason's gain formula.

UNIT-2

Time Response Analysis

Standard test signals–time response of first and second order systems–time domain specifications - steady state errors and error constants - effects of proportional (P) -proportional integral (PI) - proportional derivative (PD) proportional integral derivative (PID) systems.

UNIT-3

Stability and Root Locus Technique

The concept of stability – Routh's stability criterion – limitations of Routh's stability, root locus concept – construction of root loci (simple problems) - Effect of addition of Poles and Zeros to the transfer function.

UNIT-4

Frequency Response Analysis

Introduction to frequency domain specifications – Bode diagrams – transfer function from the Bode diagram –Polar plots, Nyquist stability criterion- stability analysis using Bode plots (phase margin and gain margin).

UNIT-5

Classical Control Design Techniques

Lag, lead, lag-lead compensators - physical realisation - design of compensators using Bode plots.

Text Books:

1. Modern Control Engineering by Kotsuhiko Ogata, Prentice Hall of India, 2010.
2. Automatic control systems by Benjamin C.Kuo, Prentice Hall of India, 2ndEdition.

Reference Books:

1. Control Systems principles and design by M.Gopal, Tata Mc Graw Hill education Pvt Ltd., 4th Edition.
2. Control Systems Engineering by Norman S.Nise,Wiley Publications ,7th edition
3. Control Systems by Mani k Dhanesh N, Cengage publications.
4. Control Systems Engineering by I.J.Nagarath and M.Gopal, New age Publications, International 5th Edition.
5. Control Systems Engineering by S.Palani, Tata McGraw Hill Publications.

Online Learning Resources:

1. https://archive.nptel.ac.in/courses/107/106/107106081/
2. https://archive.nptel.ac.in/courses/108/106/108106098/
3. https://nptelvideos.com/video.php?id=1423&c=14

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II Year II Semester	Course Code : BT24EE2204	L	T	P	C
		0	0	3	1.5
INDUCTION AND SYNCHRONOUS MACHINES LAB					

Course Objectives:

The objectives of this course is

- To apply the concepts of speed control methods in 3-phase Induction Motor.
- To experimentally develop circle diagram and obtain equivalent circuit to analyse the performance of 3-phase induction motor
- To apply the concepts of power factor improvement on single phase Induction Motor
- To perform various testing methods on alternators for experimentally predetermine the regulation

Course Outcomes:

CO1: Analyze the speed control methods on 3-phase Induction Motor.

CO2: Evaluate the performance of 3-phase Induction Motor by obtaining the locus diagram and equivalent circuit of 3-phase Induction Motor

CO3: Adapt the power factor improvement methods for single phase Induction Motor

CO4: Pre-determinetheregulationof3-phasealternator

CO5: Determine the synchronous machine reactance of 3-phase alternator

CO6: Analyze the various operating conditions of synchronous motor.

List of Experiments

Any 10 experiments of the following are required to be conducted

1. Brake test on three phase Induction Motor.
2. Circle diagram of three phase induction motor.
3. Speed control of three phase induction motor by V/f method.
4. Equivalent circuit of single-phase induction motor.
5. Power factor improvement of single-phase induction motor by using capacitors.
6. Load test on single phase induction motor.
7. Regulation of a three-phase alternator by synchronous impedance method.
8. Regulation of a three-phase alternator by MMF method.
9. V and Inverted V curves of a three-phase synchronous motor.
10. Determination of X_d, X_q & Regulation of a salient pole synchronous generator.
11. Determination of efficiency of three phase alternator by loading with three phase induction motor.
12. Determination of efficiency of a single-phase AC series Motor by conducting Brake test.

Online Learning Resources: 1.https://em-coep.vlabs.ac.in/List%20of%20experiments.html

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(DR24-II[md] YEAR II SEM COURSE STRUCTURE & SYLLABUS)

II Year II Semester	Course Code : BT24EE2205	L	T	P	C
		0	0	3	1.5
CONTROL SYSTEMS LAB					

Course Objectives:

- To impart hands on experience to understand the performance of basic control system components such as magnetic amplifiers, D.C. servo motors, A.C. Servo motors and Synchros.
- To understand time and frequency responses of control system with and without Controllers and compensators.
- To know the different logic gates and Boolean expressions using PLC.

Course Outcomes:

At the end of the course, the student will be able to,

CO1: Analyze the performance of Magnetic amplifier, D.C and A.C. servomotors and synchros.
CO2: Design of PID controllers and compensators.
CO3: Evaluate temperature control of an oven using PID controller
CO4: Determine the transfer function of D.C Motor and
CO5. Examine the truth table of logic gates using PLC.
CO6: Judge the stability in time and frequency domain and Kalman's test for controllability and observability.

List of Experiments

Any 10 of the following experiments are to be conducted:

1. Analysis of Second order system in time domain
2. Characteristics of Synchros
3. Effect of P, PD, PI, PID Controller on a second order systems
4. Design of Lag and lead compensation–Magnitude and phase plot
5. Transfer function of DC motor
6. Root locus, Bode Plot and Nyquist Plot for the transfer function of systems up to 5th order using MATLAB.
7. Kalman's test of Controllability and Observability using MATLAB.
8. Temperature controller using PID
9. Characteristics of magnetic amplifiers
10. Characteristics of AC servo motor
11. Characteristics of DC servo motor
12. Time response of second order system using MATLAB.

Online Learning Resources: https://ee-dei.vlabs.ac.in/List%20of%20experiments.html

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Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada
Accredited with A^{++} Grade by NAAC & Accredited by NBA (B. TECH – CSE, ECE & EEE)
Ph: 08816-221238 Email: dnrcet@gmail.com website: https://dnrcet.org

Bhimavaram,
27/06/25.

To

The Principal,

DNRCET,

Bhimavaram.

Sub: Proposal for Joint Add-On Courses organized by ECE and EEE Depts-reg.

Respected Sir,

I am writing to formally propose the introduction of **Add-On Courses** for ECE & EEE branch students in the upcoming academic year. These courses are designed to supplement the existing curriculum and equip students with additional skills that are aligned with current industry demands and technological trends.

The proposed Add-On Courses include:

1. **Embedded & IoT Training** – To introduce students to smart systems and practical hardware-software integration.
2. **Advanced VLSI Design and Verification Techniques** – To improve the students core knowledge and practical hardware-software integration.

These courses will be conducted and organized in collaboration with **industry experts, certified trainers and faculty members**. Certification will be provided to students upon successful completion, which will be beneficial for their higher studies, internships and placements. I kindly requesting to initiate the process of organizing these Add-On Courses.

Note: These titles may change as per the students requirements.

Thanking you Sir,

Yours Sincerely,

(Dr.KBVSR Subrahmanyam)
Prof.&HOD,EEE

(Dr.K.Venugopal) 27/6/25
Assoc.Prof and HOD, ECE

(Principal) 27/6.

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Ph: 08816-221238 Email: dnrcet@gmail.com website: https://dnrcet.org

Bhimavaram,

27/06/25.

To

The Principal,

DNRCET,

Bhimavaram.

Sub: Proposal for jointly organizing FDPs by ECE and EEE Depts-reg.

Respected Sir,

I am writing to formally propose the FDPs for ECE & EEE branch students in the upcoming academic year. This will equip the faculty with additional skills and gain knowledge that are aligned with current industry demands and technological trends.

Thc proposed FDPs include:

1. **Embedded systems & IoT**
2. **Edge Computing and IoT in modern communication networks**
3. These FDPs will be conducted and organized in collaboration with **industry experts, certified trainers and faculty members**. Certification will be provided to Faculty upon successful completion, which will be beneficial for their career growth. I kindly requesting to initiate the process of organizing these FDPs.

Note: These titles may change as per the faculty requirements.

Thanking you Sir,

Yours Sincerely,

(Dr.KBVSR Subrahmanyam)
Prof.&HOD,EEE

(Dr.K.Venugopal)
Assoc.Prof and HOD, ECE