



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF CIVIL ENGINEERING

COURSE STRUCTURE AND SYLLABUS

For UG – R20

B. TECH - CIVIL ENGINEERING

(Applicable for batches admitted from 2020-2021)



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA - 533 003, Andhra Pradesh, India

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Coordinator-IQAC
RKCE

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Kethanakonda (V), Ibrahimpatnam (M),
Vijayawada, AMARAVATI-521 456



20-21

R-20 Syllabus for CE, JNTUK w. e. f. 2020-21

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DEPARTMENT OF CIVIL ENGINEERING

III Year – I Semester	PROFESSIONAL CORE COURSE	L	T	P	C
		3	0	0	3
PC 501 STRUCTURAL ANALYSIS					

Course Learning Objectives:

- To give preliminary concepts of assessment of bending moment and shear force in Propped cantilevers, fixed beams and continuous beams - due to various loading conditions.
- To impart concepts of Bending Moment and Shear force for beams with different boundary and loading conditions.
- The procedure for development of slope deflection equations and to solve application to continuous beams with and without settlement of supports.
- The concepts of moving loads and influence lines are imparted for assessment of maximum SF and BM at a given section when loads of varying spans rolling loads of Pratt and Warren trusses.

Course Outcomes:

Upon successful completion of this course the student will be able to,

- Distinguish between the determinate and indeterminate structures.
- Identify the behavior of structures due to the expected loads, including the moving loads, acting on the structure.
- Estimate the bending moment and shear forces in beams for different fixity conditions.
- Analyze the continuous beams using various methods -, three moment method, slope deflection method, energy theorems.
- Draw the influence line diagrams for various types of moving loads on beams/bridges.
- Analyze the loads in Pratt and Warren trusses when loads of different types and spans are passing over the truss.

Syllabus:

UNIT – I Propped Cantilever and Fixed beams

Propped Cantilevers: Introduction -Degree of Static and Kinematic indeterminacy of Beams, frames and trusses. Analysis of propped cantilevers-shear force and bending moment diagrams-Elastic curve - Deflection of propped cantilever beams.

Fixed Beams – Introduction to statically indeterminate beams with U. D. load, central point load, eccentric point load, number of point loads, uniformly varying load, couple and combination of loads - shear force and Bending moment diagrams-Elastic curve - Deflection of fixed beams including effect of sinking of support, effect of rotation of a support.

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UNIT – II Analysis of Continuous beams and Portal Frames

Slope-Deflection Method: Introduction, derivation of slope deflection equation, application to continuous beams with and without settlement of supports. Analysis of Single bay single storey portal frames without sway. Shear force and Bending moment diagrams, Elastic curve.

Moment distribution method: Application to continuous beams with and without settlement of supports. Analysis of Single bay single storey portal frames without sway. Shear force and Bending moment diagrams, Elastic curve.

UNIT III Analysis of Pin-Jointed Plane Frames: Determination of Forces in members of plane pin-jointed (determinate) perfect trusses by (i) method of joints (ii) method of sections and (iii) Method of Tension coefficients. Analysis of various types of cantilever and simply supported trusses by method of joints, method of sections and Tension coefficients.

UNIT – IV Moving Loads And Influence Lines: Introduction maximum SF and BM at a given section and absolute maximum S.F. and B.M due to single concentrated load, U. D load longer than the span, U. D load shorter than the span, two point loads with fixed distance between them and several point loads-Equivalent uniformly distributed load-Focal length.

Definition of influence line for SF, Influence line for BM- load position for maximum SF at a section-Load position for maximum BM at a sections, single point load, U.D. load longer than the span, U.D. load shorter than the span- Influence lines for forces in members of Pratt and Warren trusses.

UNIT – V MATRIX METHODS OF ANALYSIS: Introduction to Flexibility and Stiffness matrix methods of analyses using 'system approach' up to three degree of indeterminacy– Analysis of continuous beams including settlement of supports using flexibility and stiffness methods - Analysis of pin-jointed determinate plane frames using flexibility and stiffness methods- Analysis of single bay single storey portal frames using only stiffness method - Shear force and bending moment diagrams - Elastic curve.


Text Books:

1. Structural Analysis by R.C. Hibbeler, Pearson, New Delhi.
2. Basic Structural Analysis, K U Muthu et. al., IK International Publishing house pvt. Ltd.

References

1. Indeterminate Structural Analysis, K U Muthu et. al., IK International Publishing house pvt. Ltd.
2. Analysis of Structures- Vol. I and II, V. N. Vazirani and M. M. Ratwani, Khanna Publishers, New Delhi.
3. Mechanics of Structures Vol – II by H.J.Shah and S.B.Junnarkar, Charotar Publishing House Pvt. Ltd.
4. Structural Analysis by Devdas Menon, Narosa Publishing Housing Pvt. Ltd.
5. Structural Analysis: A Matrix Approach, G.S.Pandit and S.P.Gupta, Mc Graw Hill Pvt. Ltd.


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE AND SYLLABUS

For

B.TECH – ELECTRICAL AND ELECTRONICS ENGINEERING

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

III Year – I SEMESTER	L	T	P	C
SWITCHGEAR AND PROTECTION (PROFESSIONAL ELECTIVE – II)	3	0	0	3

Preamble:

In order to supply power from generating end to receiving end several equipments are connected in to the system. In order to protect the equipments and components against various operating conditions and over voltages protective devices are required to be installed in the system. Topics specified in this subject deal with various types of protective equipments and their working principle including limitations etc.

Course Objectives:

- To provide the basic principles and operation of various types of circuit breakers.
- To know the classification, operation and application of different types of electromagnetic protective relays.
- To explain protective schemes for generator and transformers.
- To gain the knowledge of various protective schemes used for feeders and bus bars.
- To explain the principle and operation of different types of static relays.
- To understand different types of over voltages in a power system and principles of different neutral grounding methods.

UNIT-I**Circuit Breakers**

Application oriented evolution of Switchgear - Miniature Circuit Breaker(MCB)– Elementary principles of arc interruption– Restriking Voltage and Recovery voltages– Restriking phenomenon - RRRV– Average and Max. RRRV– Current chopping and Resistance switching– Concept of oil circuit breakers– Description and operation of Air Blast– Vacuum and SF₆ circuit breakers– Circuit Breaker ratings and specifications– Concept of Auto reclosing – Application Spectrum Numerical examples

UNIT-II**Electromagnetic Protection**

Relay connection – Balanced beam type attracted armature relay - induction disc and induction cup relays–Torque equation - Relays classification–Instantaneous– DMT and IDMT types– Applications of relays: Over current and under voltage relays– Directional relays– Differential relays and percentage differential relays– Universal torque equation– Distance relays: Impedance– Reactance– Mho and offset mho relays– Characteristics of distance relays and comparison.

UNIT-III**Generator Protection**

Protection of generators against stator faults– Rotor faults and abnormal conditions– restricted earth fault and inter turn fault protection– Numerical examples.

Transformer Protection

Percentage differential protection– Design of CT's ratio– Buchholz relay protection–Numerical examples.

UNIT-IV**Feeder and Bus bar Protection & Static Relays**

Over current protection schemes – PSM - TMS– Numerical examples. Carrier current and three zone distance relay using impedance relays.

Protection of bus bars by using Differential protection.

Static relays: Introduction – Classification of Static Relays – Basic Components of Static Relays.

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UNIT-V**Protection against over voltage and grounding**

Generation of over voltages in power systems– Protection against lightning over voltages– Valve type and zinc oxide lightning arresters.

Grounded and ungrounded neutral systems – Effects of ungrounded neutral on system performance – Methods of neutral grounding: Solid–resistance–Reactance–Arcing grounds and grounding Practices.

Course Outcomes:

After the completion of the course the student should be able to:

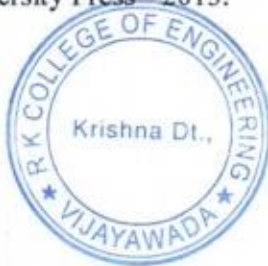
- Illustrate the principles of arc interruption for application to high voltage circuit breakers of air - oil - vacuum - SF₆ gas type.
- Analyse the working principle and operation of different types of electromagnetic protective relays.
- Acquire knowledge of protective schemes for generator and transformers for different fault conditions.
- Classify various types of protective schemes used for feeders and bus bar protection and Types of static relays.
- Analyse the operation of different types of over voltages protective schemes required for insulation co-ordination and types of neutral grounding.

Text Books:

1. Power System Protection and Switchgear by Badri Ram and D.N Viswakarma - Tata McGraw Hill Publications - 2nd edition - 2011.
2. Power system protection- Static Relays with microprocessor applications by T.S.Madhava Rao - Tata McGraw Hill - 2nd edition.

Reference Books:

1. Fundamentals of Power System Protection by Paithankar and S.R.Bhide. - PHI - 2003.
2. Art & Science of Protective Relaying – by C R Mason - Wiley Eastern Ltd.
3. Protection and SwitchGear by BhaveshBhalja - R.P. Maheshwari - Nilesh G.Chothani - Oxford University Press - 2013.



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I Year - II Semester	L	T	P	C
	2	0	2	3
OBJECT ORIENTED PROGRAMMING THROUGH JAVA				

Course Objectives:

This subject will help to improve

- the analytical skills of object oriented programming
- Overall development of problem solving and critical analysis.
- Formal introduction to Java programming language

Course Outcomes:

On successful completion of this course, the student should be able to:

- Show competence in the use of the Java programming language in the development of small to medium- sized application programs that demonstrate professionally acceptable coding and performance standard
- Illustrate the basic principles of the object-oriented programming
- Demonstrate an introductory understanding of graphical user interfaces, multithreaded programming, and event-driven programming.

Unit I

Introduction to Java : Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.

Objects and Classes : Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, StringBuffer, File, this reference.

Unit II

Inheritance and Polymorphism : Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.

Unit III

Event and GUI programming : Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing, Creating a swing applet, swing controls and components.

Unit IV

I/O programming: Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files. Event driven model, handling events

Unit V

Multithreading in java: Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try-catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.

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Text Books:

- 1) Introduction to Java Programming (Comprehensive Version), Daniel Liang, Seventh Edition, Pearson.
- 2) Programming in Java, Sachin Malhotra & Saurabh Chaudhary, Oxford University Press.

Reference Books:

- 1) Murach's Beginning Java 2, Doug Lowe, Joel Murach and Andrea Steelman, SPD.
- 2) Core Java Volume-I Fundamentals, Eight Edition, Horstmann & Cornell, Pearson Education.
- 3) The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.
Java Programming, D. S. Malik, Cengage Learning.

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ACTION TAKEN BASED ON STAKEHOLDERS FEEDBACK FOR ENHANCEMENT OF CURRICULUM 2023-2024


1.COURSE	B.Tech (CE) R-20 Regulation
2.SUBJECT	ADVANCE SURVEYING
3.RECOMMENDATIONS	For the current revised syllabus there should be more industrial exposure to the students and hence the course like "ADVANCE SURVEYING "should be a compulsory subject.
4.ACTION	After receiving feedback from the various stakeholder viz., students, teachers the recommendations are sent IQAC team and approval taken from the principal of the college.


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ACTION TAKEN BASED ON STAKEHOLDERS FEEDBACK FOR ENHANCEMENT OF CURRICULUM 2023-2024

1.COURSE	B.Tech (EEE) R-20 Regulation
2.SUBJECT	SWITCH GEAR AND PROTECTION
3.RECOMMENDATIONS	1.For the current revised syllabus there should be more industrial exposure to the students and hence the course like "switch gear and protection "should be a compulsory subject.
4.ACTION	After receiving feedback from the various stakeholder viz., students, teachers the recommendations are sent IQAC team and approval taken from the principal of the college.

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ACTION TAKEN BASED ON STAKEHOLDERS FEEDBACK FOR ENHANCEMENT OF CURRICULUM 2023-2024


1.COURSE	B.Tech (ECE) R-20 Regulation
2.SUBJECT	OOPS THROUGH JAVA
3.RECOMMENDATIONS	1.For the current revised syllabus there should be more industrial exposure to the students and hence the course like "OOPS THROUGH JAVA "should be a compulsory subject.
4.ACTION	After receiving feedback from the various stakeholder viz., students, teachers the recommendations are sent IQAC team and approval taken from the principal of the college.



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ACTION TAKEN REPORT

STAKEHOLDER'S FEEDBACK ON CURRICULUM

The feedback on curriculum was collected from all the stakeholders and analysed by IQAC team, and the relevant suggestions were listed by IQAC team. The institution is an autonomous institution and affiliated to JNTU Kakinada, and there is provision to modify the content in the curriculum by conducting board of studies meeting.

The analysis of the feedback was discussed with the principal and BOS finally taken approval from the principal to add the below mentioned topics in the curriculum.

Points added in the curriculum:

1. Feedback given by the stakeholders, to enhancement of the curriculum we have filled the gapes in the subject "SWITCH GEAR AND PROTECTION, ADVANCE SURVEYING, OOPS THROUGH JAVA"
2. To remove the academic stress in the students we added "HEALTH AND WELLNESS YOGA AND SPORTS" in the curriculum
3. To focus on listening, speaking, reading and writing skills we added "COMMUNICATION SKILLS" in the curriculum.
4. To know the values and ethics we added "HUMAN VALUES AND PROFESSIONAL ETHICS" in the curriculum.
5. Skill enhancement courses like "DATA STRUCTURES, PYTHON PROGRAMMING" courses added in the curriculum.



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