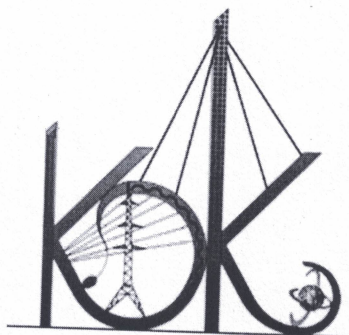




**KDK College of Engineering, Nagpur 440024**

*Scheme and Syllabus for*  
**Bachelor of Technology (Electrical Engineering)**

*Submitted by*  
**Board of Studies in Electrical Engineering**

**2025-26**

## **SYUG Engineering Curriculum (Proposed) : NEP-Electrical Engineering**

### **Institute**

#### **Vision:**

Service to the society through Quality Technical Education

#### **Mission:**

- Academic Excellence in Engineering and Technology Through Complete dedication to all round Growth of Students.
- Enable the Students to Develop Outstanding Professional with Technical Competence and Management Skills.
- Fulfill the Expectance of the Society and Industries with Ethical Standards for developing Sustainable Solutions

### **Department**

#### **Vision:**

"To impart quality technical education for developing competent electrical engineers capable of accepting challenges of the modern society."

#### **Mission:**

- M1.** To provide an adoptive academic environment with a continuous motivation to budding electrical engineers for making them academically excellent and technically competent having good managerial skills to fulfill the expectations of industries for developing sustainable solutions.
- M2.** To work for all round growth of students having good moral values in a dedicated manner.
- M3.** To inculcate a sense of responsibility among the students for well-being of the society.

### **Program Educational Objectives (PEOs):**

- PEO 1.** Graduates of Electrical Engineering shall have sound technical knowledge and all round personalities ready to pursue high level career in industries and academics
- PEO 2.** Graduates of Electrical Engineering shall have broad based trainings to cater to the requirements of modern electrical industries and ready for working as electrical consultants.
- PEO 3.** Graduates of Electrical Engineering shall have sensitivity towards global environmental issues and sustainable developments through use of renewable energy sources.



## PROGRAM OUTCOMES (POs)

**PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

**PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

**PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

**PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

**PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

**PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

**PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

**PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

**PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

**PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

**PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

## PROGRAM SPECIFIC OUTCOMES (PSOs)

**PSO1:** Technical and managerial skills necessary to enter careers in design, application, installation, manufacturing, testing, operation and/or maintenance of electrical systems.

**PSO2:** Knowledge of information technology skills including word processing, spread sheet, power point presentation, electrical system simulation, computer programming, internet/library research and electrical CAD drawing encouraging and increasing one's abilities for lifelong learning.



**B.Tech. Sem-III (Electrical Engineering-Major)**

| SN                               | Course Category | Course Code | Name of Course                | BoS.       | Teaching Scheme (hrs) |    |    | Total Credit | Examination Scheme |        |     |     |           |     |
|----------------------------------|-----------------|-------------|-------------------------------|------------|-----------------------|----|----|--------------|--------------------|--------|-----|-----|-----------|-----|
|                                  |                 |             |                               |            | TH                    | TU | P  |              | Exam Hrs           | Theory |     |     | Practical |     |
|                                  |                 |             |                               |            |                       |    |    |              |                    | MSE    | CA  | ESE | CA        | ESE |
| 1                                | PCC – II        | 3BEE01T     | Network Analysis              | Electrical | 3                     | -  | -  | 3            | 3                  | 30     | 20  | 50  | -         | -   |
| 2                                | PCC – II        | 3BEE01P     | Network Analysis Lab          | Electrical | -                     | -  | 2  | 1            | -                  | -      | -   | -   | 25        | 25  |
| 3                                | PCC – III       | 3BEE02T     | Digital Electronics           | Electrical | 3                     | -  | -  | 3            | 3                  | 30     | 20  | 50  | -         | -   |
| 4                                | PCC – III       | 3BEE02P     | Digital Electronics Lab       | Electrical | -                     | -  | 2  | 1            | -                  | -      | -   | -   | 25        | 25  |
| 5                                | MDM-I           | 3BMDEE01T   | Refer Basket                  | Electrical | 3                     | -  | -  | 3            | 3                  | 30     | 20  | 50  | -         | -   |
| 6                                | OE-I            | 3BOE01T     | Refer Basket                  | ASH        | 3                     | -  | -  | 3            | 3                  | 30     | 20  | 50  | -         | -   |
| 7                                | EEM             | 3BEM01T     | Refer Basket                  | ASH        | 2                     | -  | -  | 3            | 3                  | 30     | 20  | 50  | -         | -   |
| 8                                | VEC             | 3BVE01T     | Refer Basket                  | ASH        | 2                     | -  | -  | 2            | 2                  | 15     | 10  | 25  | -         | -   |
| 9                                | CEP             | 3BEE04P     | Community Engineering Project | Electrical | -                     | -  | 4  | 2            | -                  | -      | -   | -   | 100       | -   |
| Total                            |                 |             |                               |            | 16                    | -  | 08 | 20           | -                  | 150    | 100 | 250 | 150       | 50  |
| Total Marks (Theory & Practical) |                 |             |                               |            |                       |    |    |              | 500                |        |     | 200 |           |     |
| Total Marks (III Semester)       |                 |             |                               |            |                       |    |    |              | 700                |        |     |     |           |     |

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**B.Tech. Sem-IV (Electrical Engineering-Major)**

| SN                               | Course Category | Course Code | Name of Course                     | BoS.       | Teaching Scheme (hrs) |    |    | Total Credit | Examination Scheme |     |    |     |           |    |
|----------------------------------|-----------------|-------------|------------------------------------|------------|-----------------------|----|----|--------------|--------------------|-----|----|-----|-----------|----|
|                                  |                 |             |                                    |            | TH                    | TU | P  |              | Theory             |     |    |     | Practical |    |
|                                  |                 |             |                                    |            |                       |    |    |              | Exam Hrs           | MSE | CA | ESE |           | CA |
| 1                                | PCC – IV        | 4BEE01T     | Electromagnetic Field              | Electrical | 4                     | -  | -  | 4            | 3                  | 30  | 20 | 50  |           |    |
| 2                                | PCC – V         | 4BEE02T     | Electrical Machine-I               | Electrical | 3                     | -  | -  | 3            | 3                  | 30  | 20 | 50  |           |    |
| 3                                | PCC – V         | 4BEE02P     | Electrical Machine-I Lab.          | Electrical | -                     | -  | 2  | 1            |                    |     |    |     | 25        | 25 |
| 4                                | MDM-II          | 4BMDEE02T   | Refer Basket                       | Electrical | 2                     | -  | -  | 2            | -                  | 15  | 10 | 25  |           |    |
| 5                                | OE-II           | 4BOE02T     | Refer Basket                       | ASH        | 2                     | -  | -  | 2            | 2                  | 15  | 10 | 25  |           |    |
| 6                                | VSEC-III        | 4BEE03P     | Introduction to Python Programming | Electrical | 1                     | -  | 2  | 2            | -                  |     |    |     | 25        | 25 |
| 7                                | AEC-II          | 4BAE02T     | Refer Basket                       | ASH        | 1                     | -  | 2  | 2            | 3                  | 15  | 10 | 25  |           |    |
| 8                                | EEM             | 4BEM02T     | Refer Basket                       | ASH        | 2                     | -  | -  | 2            | 2                  | 15  | 10 | 25  |           |    |
| 9                                | VEC             | 4BVE02T     | Refer Basket                       | ASH        | -                     | -  | 4  | 2            | 3                  |     |    |     | 100       |    |
| Total                            |                 |             |                                    |            | 14                    | -  | 10 | 20           | -                  | 120 | 80 | 200 | 150       | 50 |
| Total Marks (Theory & Practical) |                 |             |                                    |            |                       |    |    | 400          |                    |     |    |     |           |    |
| Total Marks (IV Semester)        |                 |             |                                    |            |                       |    |    | 600          |                    |     |    |     |           |    |

**Exit option:** Award of Diploma Certificate in Electrical Engineering with 80 credits and an additional 8 credits in skill-based courses, internship, mini projects etc.

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## List of Multi-disciplinary Minor (MDM)

### Electrical Engineering & Applications

| Offered by Department  | Sr. No. | Course category               | Course Code | Title of the MDM Course                          | Credit | Semester |
|------------------------|---------|-------------------------------|-------------|--------------------------------------------------|--------|----------|
| Electrical Engineering | 1       | Multi-disciplinary Minor - 01 | 3BMDEE01T   | Principles & Practices in Electrical Engineering | 3      | III      |
|                        | 2       | Multi-disciplinary Minor - 02 | 4BMDEE02T   | Electrical Measurement                           | 2      | IV       |
|                        | 3       | Multi-disciplinary Minor - 03 | 5BMDEE03T   | Electrical Machines                              | 3      | V        |
|                        | 4       | Multi-disciplinary Minor - 04 | 6BMDEE04T   | Power Electronics                                | 2      | VI       |
|                        | 5       | Multi-disciplinary Minor - 05 | 7BMDEE05T   | Introduction to Power System                     | 2      | VII      |
|                        | 6       | Multi-disciplinary Minor - 06 | 8BMDEE06T   | Electrical Power Utilization                     | 2      | VIII     |

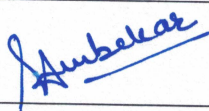
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|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-2026 onwards |
| Chairman, BoS                                                                       | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                     |



**K. D. K College of Engineering, Nagpur**  
**Electrical Engineering Department**  
**Specialization of Major in Electrical Engineering** (Applicable to Students of Electrical Engineering)

| Domain                                                       | No | Course Name                                                                  | Coordinator                                                    | Institute                 | Course Duration |
|--------------------------------------------------------------|----|------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------|-----------------|
| <b>Power System and Power Electronics (Minimum 72 Weeks)</b> | 1  | Basic Electrical Circuits                                                    | Prof. Gajendranath Chowdary                                    | IIT Hyderabad (IITM)      | 12 weeks        |
|                                                              | 2  | Network Analysis                                                             | Prof. Tapas Kumar Bhattacharya                                 | IIT Kharagpur             | 12 weeks        |
|                                                              | 3  | Electrical machines - I                                                      | Prof. D Kastha, Prof. Suman Maiti                              | IIT Kharagpur             | 12 weeks        |
|                                                              | 4  | Electrical Machines - II                                                     | Prof. Tapas Kumar Bhattacharya                                 | IIT Kharagpur             | 12 weeks        |
|                                                              | 5  | Power System Analysis                                                        | Prof. Debapriya Das                                            | IIT Kharagpur             | 12 weeks        |
|                                                              | 6  | Fundamental of Power Electronics                                             | Prof. L.Umanand                                                | IISc Bangalore            | 12 weeks        |
|                                                              | 7  | Control Engineering                                                          | Prof. Ramkrishna Pasumathy<br>Prof. Mousumi Mukherjee          | IIT Madras IITEST Shibpur | 12 weeks        |
|                                                              | 8  | Electrical Measurement and Electronic Instruments                            | Prof. Avishek Chatterjee                                       | IIT Kharagpur             | 12 weeks        |
|                                                              | 9  | Computer Aided Power System Analysis                                         | Prof. Biswarup Das                                             | IIT Roorkee               | 12 weeks        |
|                                                              | 10 | Fundamentals of Electric Drives                                              | Prof. Shyama Prasad Das                                        | IIT Kanpur                | 8 weeks         |
|                                                              | 11 | High Power Multilevel Converters- Analysis, design and operational issues    | Prof. Anandarup Das                                            | IIT Delhi                 | 12 weeks        |
|                                                              | 12 | Design Of Power Electronic Converters                                        | Prof. Shabari Nath                                             | IIT Guwahati              | 8 weeks         |
|                                                              | 13 | Power System Protection and Switchgear                                       | Prof. Bhaveshkumar R. Bhalja                                   | IIT Roorkee               | 8 weeks         |
|                                                              | 14 | Smart Grid: Basics to Advanced Technologies                                  | Prof. N.P. Padhy<br>Prof. Premalata Jena                       | IIT Roorkee               | 12 weeks        |
|                                                              | 15 | Power Quality                                                                | Prof. Bhim Singh                                               | IIT Delhi                 | 12 weeks        |
|                                                              | 16 | Digital Protection of Power System                                           | Prof. Bhaveshkumar R. Bhalja                                   | IIT Roorkee               | 8 weeks         |
|                                                              | 17 | Digital Control in Switched Mode Power Converters and FPGA-based Prototyping | Prof. Santanu Kapat                                            | IIT Kharagpur             | 12 weeks        |
|                                                              | 18 | Economic Operations and Control of Power Systems                             | Prof. Gururaj Mirle<br>Vishwanath, Prof. Narayana Prasad Padhy | IIT Kanpur                | 12 weeks        |
|                                                              | 19 | A Basic Course on Electric and Magnetic Circuits                             | Prof. Ashok Kumar Pradhan                                      | IIT Kharagpur             | 12 weeks        |
|                                                              | 20 | Power Electronics Applications in Power Systems                              | Prof. Sanjib Ganguly                                           | IIT Guwahati              | 12 weeks        |
|                                                              | 21 | Advance Power Electronics                                                    | Prof. Bhim Singh                                               | IIT Delhi                 | 12 weeks        |
|                                                              | 22 | Charging Infrastructure                                                      | Prof. Apurv Kumar Yadav                                        | IIT Roorkee               | 12 weeks        |
|                                                              | 23 | Advanced Distribution System Analysis and Operation                          | Prof. N. P. Padhy,<br>Prof. Subho Paul                         | IIT Roorkee               | 12 weeks        |
|                                                              | 24 | Power Network Analysis                                                       | Prof. Abheejeet Mohapatra                                      | IIT Kanpur                | 12 weeks        |

**Note:-** 1. Ascertain the credits for each course  
2. Total minimum credits to be acquired is 18.

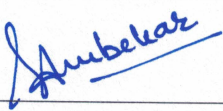
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|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-2026 onwards |
| Chairman, BoS                                                                      | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                     |



**K. D. K College of Engineering, Nagpur**  
**Electrical Engineering Department**  
**Specialization of Minor in Electrical Engineering** (Applicable to Students of other Disciplines)

| Domain                                                       | No | Course Name                                         | Coordinator                                                     | Institute                 | Course Duration |
|--------------------------------------------------------------|----|-----------------------------------------------------|-----------------------------------------------------------------|---------------------------|-----------------|
| <b>Power System and Power Electronics (Minimum 72 Weeks)</b> | 1  | Basic Electrical Circuits                           | Prof. Gajendranath Chowdary                                     | IIT Hyderabad (IITM)      | 12 weeks        |
|                                                              | 2  | Network Analysis                                    | Prof. Tapas Kumar Bhattacharya                                  | IIT Kharagpur             | 12 weeks        |
|                                                              | 3  | Electrical machines - I                             | Prof. D Kastha, Prof. Suman Maiti                               | IIT Kharagpur             | 12 weeks        |
|                                                              | 4  | Electrical Machines - II                            | Prof. Tapas Kumar Bhattacharya                                  | IIT Kharagpur             | 12 weeks        |
|                                                              | 5  | Fundamental of Power Electronics                    | Prof. L.Umanand                                                 | IISc Bangalore            | 12 weeks        |
|                                                              | 6  | Control Engineering                                 | Prof. Ramkrishna Pasumarthi<br>Prof. Mousumi Mukherjee          | IIT Madras IITEST Shibpur | 12 weeks        |
|                                                              | 7  | Electrical Measurement and Electronic Instruments   | Prof. Avishek Chatterjee                                        | IIT Kharagpur             | 12 weeks        |
|                                                              | 8  | Fundamentals of Electric Drives                     | Prof. Shyama Prasad Das                                         | IIT Kanpur                | 8 weeks         |
|                                                              | 9  | Design Of Power Electronic Converters               | Prof. Shabari Nath                                              | IIT Guwahati              | 8 weeks         |
|                                                              | 10 | Power System Protection and Switchgear              | Prof. Bhaveshkumar R. Bhalja                                    | IIT Roorkee               | 8 weeks         |
|                                                              | 11 | Smart Grid: Basics to Advanced Technologies         | Prof. N.P. Padhy<br>Prof. Premalata Jena                        | IIT Roorkee               | 12 weeks        |
|                                                              | 12 | Power Quality                                       | Prof. Bhim Singh                                                | IIT Delhi                 | 12 weeks        |
|                                                              | 13 | Digital Protection of Power System                  | Prof. Bhaveshkumar R. Bhalja                                    | IIT Roorkee               | 8 weeks         |
|                                                              | 14 | Economic Operations and Control of Power Systems    | Prof. Gururaj Mirlle<br>Vishwanath, Prof. Narayana Prasad Padhy | IIT Kanpur                | 12 weeks        |
|                                                              | 15 | A Basic Course on Electric and Magnetic Circuits    | Prof. Ashok Kumar Pradhan                                       | IIT Kharagpur             | 12 weeks        |
|                                                              | 16 | Power Electronics Applications in Power Systems     | Prof. Sanjib Ganguly                                            | IIT Guwahati              | 12 weeks        |
|                                                              | 17 | Advance Power Electronics                           | Prof. Bhim Singh                                                | IIT Delhi                 | 12 weeks        |
|                                                              | 18 | Charging Infrastructure                             | Prof. Apurv Kumar Yadav                                         | IIT Roorkee               | 12 weeks        |
|                                                              | 19 | Advanced Distribution System Analysis and Operation | Prof. N. P. Padhy,<br>Prof. Subho Paul                          | IIT Roorkee               | 12 weeks        |
|                                                              | 20 | Power Network Analysis                              | Prof. Abheejeet Mohapatra                                       | IIT Kanpur                | 12 weeks        |

**Note:-** 1. Ascertain the credits for each course  
2. Total minimum credits to be acquired is 18.

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-------------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-2026 onwards |
| Chairman, BoS                                                                       | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                     |



KDK College of Engineering, Nagpur  
Faculty of Engineering and Technology

**Courses offered by Applied Science and Humanities Board**

**Open Elective Courses for III Sem. B. Tech.**

| Sr. No. | Semester | Course Code | Subjects                        | Credits |
|---------|----------|-------------|---------------------------------|---------|
| 1       | III      | 3BOE01T - A | Principles of Management        | 3       |
| 2       | III      | 3BOE01T - B | Professional Practices & Ethics | 3       |
| 3       | III      | 3BOE01T - C | Insurance & Banking Management  | 3       |
| 4       | III      | 3BOE01T - D | Total Quality Management        | 3       |
| 5       | III      | 3BOE01T - E | Campus Sustainability           | 3       |
| 6       | III      | 3BOE01T - F | Indian Stock Market             | 3       |
| 7       | III      | 3BOE01T - G | Climate Change                  | 3       |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
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| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |

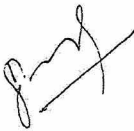
KDK College of Engineering, Nagpur  
B. Tech.  
Civil / Mechanical/ Electrical/ ETC/ CS/ IT/ AI&DS Engineering  
Courses offered by Applied Science and Humanities Board

Entrepreneurship/Economics/Management Courses (EEM-01 and EEM-02)

| Sr. No. | Course Code          | Course Name                  |
|---------|----------------------|------------------------------|
| 1       | 3BEM01T-A /4BEM02T-A | Entrepreneurship Development |
| 2       | 3BEM01T-B /4BEM02T-B | Economics for Engineers      |
| 3       | 3BEM01T-C /4BEM02T-C | Human Resource Management    |
| 4       | 3BEM01T-D /4BEM02T-D | Financial management         |
| 5       | 3BEM01T-E /4BEM02T-E | Strategic management         |

Value Education Courses (VEC-01 and VEC 02)

| EM | Course Code          | Course Name            |
|----|----------------------|------------------------|
| 1  | 3BVE01T-A /4BVE02T-A | Environmental Studies  |
| 2  | 3BVE01T-B /4BVE02T-B | Indian Constitution    |
| 3  | 3BVE01T-C /4BVE02T-C | Civic Education        |
| 4  | 3BVE01T-D /4BVE02T-D | Gender education       |
| 5  | 3BVE01T-E /4BVE02T-E | Universal Human Values |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



KDK College of Engineering, Nagpur  
Faculty of Engineering and Technology  
B. Tech.

Courses offered by Applied Science and Humanities Board

Open Elective Courses for IV Sem. B. Tech.

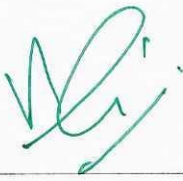
| Sr. No. | Semester | Course Code | Subjects                        | Credits |
|---------|----------|-------------|---------------------------------|---------|
| 1       | IV       | 4BOE02T - A | Corporate Social Responsibility | 2       |
| 2       | IV       | 4BOE02T - B | Life Skills                     | 2       |
| 3       | IV       | 4BOE02T - C | Digital Marketing               | 2       |
| 4       | IV       | 4BOE02T - D | Basic of Mutual Fund            | 2       |
| 5       | IV       | 4BOE02T - E | Introduction to Psychology      | 2       |
| 6       | IV       | 4BOE02T - F | World Geography & Global Issue  | 2       |
| 7       | IV       | 4BOE02T - G | Intercultural Communication     | 2       |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |

**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Civil / Mechanical/ Electrical/ ETC/ CS/ IT/ AI&DS Engineering**  
**Courses offered by Applied Science and Humanities Board**

**Ability Enhancement Courses (AEC-02)**

| Sr. No. | Course Code | Course Name                     |
|---------|-------------|---------------------------------|
| 1       | 4BAE02T-A   | Introduction to German Language |
| 2       | 4BAE02T-B   | Stress Management               |
| 3       | 4BAE02T-C   | Critical thinking               |
| 4       | 4BAE02T-D   | Employability skills            |
| 5       | 4BAE02T-E   | Technical English writing       |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
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| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. III<sup>rd</sup> Semester Electrical Engineering**

|                                   |                          |                                      |                  |                          |
|-----------------------------------|--------------------------|--------------------------------------|------------------|--------------------------|
| Semester<br>III                   | Subject Code:<br>3BEE01T | Name of Subject:<br>Network Analysis |                  |                          |
| Total Hours Distribution per week |                          |                                      |                  |                          |
| Total Credit: 3                   | Lecture (L): 3 Hrs.      |                                      | Tutorial (T) : - | Practical (P): -         |
| Examination Scheme                |                          |                                      |                  |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination               | Total Marks      | Examination<br>Duration: |
| 30 Marks                          | 20 Marks                 | 50 Marks                             | 100 Marks        | 3 Hours                  |

**Course Objectives**

Students should be able to deal with various methods of analysis of electric circuits under transient and steady state conditions.

**Course Outcomes**

**After completion of course, the students will be able to**

|     |                                                                                            |
|-----|--------------------------------------------------------------------------------------------|
| CO1 | Apply the concepts of Electric network to solve circuit problems using mesh analysis.      |
| CO2 | Solve circuit problems using node analysis.                                                |
| CO3 | Apply network theorems to obtain circuit parameters of electric networks.                  |
| CO4 | Synthesize waveforms and Apply Laplace Transforms for steady state and transient analysis. |
| CO5 | Evaluate different Network Functions and understand two port network behaviour.            |

**Course Competencies:**

- Analyse the behaviour of electrical circuits and networks.
- Understanding fundamental concepts like circuit elements, network theorems, and transient/steady-state analysis as well as developing skills in applying these concepts to solve various circuit problems.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 2   | -    | 2    | 3    | -    |
| CO2 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 2   | -    | 2    | 3    | -    |
| CO3 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 2   | -    | 2    | 3    | -    |
| CO4 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 2   | -    | 2    | 3    | -    |
| CO5 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 2   | -    | 2    | 3    | -    |



## SYLLABUS

| Details of Topic                                                                                                                                                                                                                                                                                        | Hours | Mapped with CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit I: Source Transformation &amp; Mesh Analysis</b>                                                                                                                                                                                                                                                | 6     | CO1            |
| Voltage & current sources, source transformation, Mesh basis equilibrium equations, matrix approach for solving complicated networks.                                                                                                                                                                   |       |                |
| <b>Unit II: Node Analysis &amp; Duality</b>                                                                                                                                                                                                                                                             | 6     | CO2            |
| Nodal basis equilibrium equation matrix for electrical network containing sources and reactances, Duality                                                                                                                                                                                               |       |                |
| <b>Unit III: Network Theorem</b>                                                                                                                                                                                                                                                                        | 8     | CO3            |
| Superposition theorem, Thevenin's theorem, Norton's theorem, Reciprocity theorem, Maximum power transfer theorem, Tellegen's theorem.                                                                                                                                                                   |       |                |
| <b>Unit IV: Electric Circuit Analysis using Laplace Transforms</b>                                                                                                                                                                                                                                      | 8     | CO4            |
| Review of Laplace transform, waveform synthesis, Analysis of electrical circuits using Laplace transform for standard inputs, analysis of networks with and without initial conditions using Laplace transforms.                                                                                        |       |                |
| <b>Unit V: Two port networks and Network functions</b>                                                                                                                                                                                                                                                  | 8     | CO5            |
| Two port networks, relationship between two port variables, driving point and transfer functions, properties, concept of complex frequency, Poles and zeros. Two port network parameters: Impedance parameters, admittance parameters, transmission parameters, Condition for reciprocity and symmetry. |       |                |

### Text Books

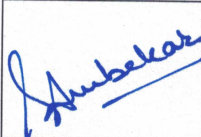
1. Engineering Circuit Analysis, Hayt & Kemmerly, 7th edition, Tata Mc Graw Hill, 2004
2. Network Analysis, Van Valkenburg, Third Edition, 2009, Prentice Hall of India.
3. Electric Circuit Analysis, P. Ramesh Babu, Second Edition 2006, SCITECH Publication (India) Pvt. Ltd.

### References Books

1. Sudhakar, A. Shyammohan, —Circuits and Network, Third Edition, 2006, Tata McGraw Hill.
2. Basic Circuit Theory, Lawrence P Huelsman, 3rd edition, PHI, 2001
3. Kelkar, Pandit, —Linear Network Theory, Pratibha Publication..

### NPTEL Link:

|   |                                                                                                                                                                                             |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Course on Network Analysis By Prof. Tapas Kumar Bhattacharya<br><a href="https://archive.nptel.ac.in/courses/108/105/108105159/">https://archive.nptel.ac.in/courses/108/105/108105159/</a> |
| 2 | Course on Circuit Theory By Prof. S. C. Dutta Roy<br><a href="https://nptel.ac.in/courses/108102042">https://nptel.ac.in/courses/108102042</a>                                              |
| 3 | Course on Basic Electric Circuits By Prof. Ankush Sharma<br><a href="https://nptel.ac.in/courses/108104139">https://nptel.ac.in/courses/108104139</a>                                       |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. III<sup>rd</sup> Semester Electrical Engineering**

|                                   |                          |                                          |                      |                          |
|-----------------------------------|--------------------------|------------------------------------------|----------------------|--------------------------|
| Semester<br>III                   | Subject Code:<br>3BEE01P | Name of Subject:<br>Network Analysis Lab |                      |                          |
| Total Hours Distribution per week |                          |                                          |                      |                          |
| Total Credit: 1                   | Lecture (L): -           | Tutorial (T) : -                         | Practical (P): 2 Hrs |                          |
| Examination Scheme                |                          |                                          |                      |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                   | Total Marks          | Examination<br>Duration: |
| -                                 | 25 Marks                 | 25 Marks                                 | 50Marks              | ---                      |

| <b>Course Objectives</b> |                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------|
| 1                        | Students should be able to choose appropriate measuring instruments to carry out various experiments |
| 2                        | Provide hands on experience of verifying the theoretical concepts studied in Network Analysis.       |

| <b>Course Outcomes</b>                                                   |                                                                       |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>After completing the practical course, students will be able to:-</b> |                                                                       |
| 1                                                                        | Verify different network theorems as applicable to electric circuits. |
| 2                                                                        | Compute various network parameters.                                   |
| 3                                                                        | Carry out simulation experiments.                                     |

**Course Competencies:**

- Equip students with the skills to analyze electrical networks.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |
| CO2 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |
| CO3 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |



### LIST OF PRACTICALS:

| Pr. No. | List of Practical                                               |
|---------|-----------------------------------------------------------------|
| 1       | To Verify Thevenin's Theorem for electrical network             |
| 2       | To Verify Norton's Theorem for electrical network               |
| 3       | To Verify Reciprocity Theorem for electrical network            |
| 4       | To Verify Maximum Power Transfer Theorem for electrical network |
| 5       | To Determine Z parameters of given network.                     |
| 6       | To Determine Y parameters of given network.                     |
| 7       | To Determine ABCD parameters of given network.                  |
| 8       | To obtain and study Transient response of R-L circuit.          |
| 9       | To obtain and study Transient response of R-C circuit.          |
| 10      | To obtain and study Transient response of R-L-C circuit.        |
| 11      | To Study of Series Resonance.                                   |
| 12      | To Study of Parallel Resonance.                                 |
| 13      | To Study of 3-phase, Star connected, Unbalanced circuit.        |
| 14      | To Study of 3-phase, Delta connected, Unbalanced circuit.       |
| 15      | Virtual lab experiment on Network Analysis.                     |

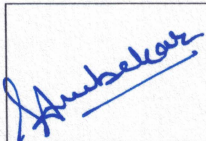
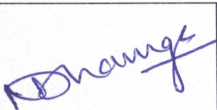
**Note: - Perform any Eight experiment based on the above list.**

#### Text Books

1. "Laboratory Courses in Electrical Engineering," S.G.Tarnekar, P.P. Kharbanda, S.B.Bodkhe, S.D. Naik , S. Chand & Company Ltd., New Delhi
2. Network Analysis , Van Valkenburg, Third Edition, 2009, Prentice Hall of India.
3. Engineering Circuit Analysis, Hayt & Kemmerly, 7th edition, Tata Mc Graw Hill, 2004

#### References Books

1. Fundamentals of Electric Circuits, Chales K. Alexander and Matthew N. O. Sadiku

|                                                                                     |                                                                                     |                                                                                     |                    |         |                                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|---------|--------------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable<br>for AY<br>2025-26<br>onwards |
| BoS<br>Chairman                                                                     | Dean (Acad.)                                                                        | Principal                                                                           | Date of<br>release | Version |                                            |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B.Tech. IIIrd Semester Electrical Engineering**

|                                   |                          |                                         |             |                          |
|-----------------------------------|--------------------------|-----------------------------------------|-------------|--------------------------|
| Semester<br>III                   | Subject Code:<br>3BEE02T | Name of Subject:<br>Digital Electronics |             |                          |
| Total Hours Distribution per week |                          |                                         |             |                          |
| Total Credit: 3                   | Lecture (L): 3 Hrs       | Tutorial (T) : --                       |             | Practical (P):-          |
| Examination Scheme                |                          |                                         |             |                          |
| Mid Sem<br>Examination            | Continual<br>Assessment  | End Sem<br>Examination                  | Total Marks | Examination<br>Duration: |
| 30 Marks                          | 20 Marks                 | 50 Marks                                | 100 Marks   | 3 Hours                  |

| <b>Course Objectives</b> |                                                                                                                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | To introduce fundamentals of digital electronics, including number systems, logic gates, Boolean algebra, and the design and simplification of combinational logic circuits.            |
| 2                        | To enable students to understand and design sequential circuits, registers, counters, memory elements, and explore digital system implementation using logic families and standard ICs. |

| <b>Course Outcomes</b>                                           |                                                                                        |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>After completion of syllabus, the student will be able to</b> |                                                                                        |
| 1                                                                | Apply the concepts of number systems used in digital system.                           |
| 2                                                                | Design and implement combinational digital circuits.                                   |
| 3                                                                | Design and implement sequential logic circuits.                                        |
| 4                                                                | Design register counters, data converters, and basics of digital-to-analog conversion. |
| 5                                                                | Apply the concepts of Logic Family & various IC's Application                          |

**Course Competencies:**

- Gain foundational knowledge of binary, octal, decimal, and hexadecimal number systems, and perform binary arithmetic and logic operations using Boolean algebra and De-Morgan's theorems.
- Develop the ability to simplify logic expressions using Karnaugh Maps and design combinational circuits like adders, subtractors, parity checkers, and code converters.
- Understand the working of flip-flops, excitation tables, and their interconversion to design memory elements and sequential systems such as multiplexers and decoders.
- Design various counters (synchronous/asynchronous), shift registers, and understand serial-parallel data conversion and digital-to-analog conversion techniques.
- Understand TTL and CMOS logic families and use standard digital ICs for practical circuit design and implementation.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 3    | -    |
| CO2 | 3                                            | 3   | 3   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 3    | -    |
| CO3 | 3                                            | 3   | 3   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 3    | -    |
| CO4 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 3    | -    |
| CO5 | 3                                            | 2   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 3    | -    |



## SYLLABUS

| Details of Topic                                                                                                                                                                                                                                                                                          | Hours | Mapped with CO |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit 1: Fundamentals of Digital Systems</b>                                                                                                                                                                                                                                                            | 8     | CO1            |
| Number systems-Binary, Octal, Decimal, Hexadecimal, binary arithmetic, one's and two's complements arithmetic, Digital Signals, basic digital circuits, Logic gates-AND, OR, NOT, Universal Gates (NAND & NOR), Exclusive – OR and Exclusive NOR, Boolean algebra. De-Morgan's Theorem.                   |       |                |
| <b>Unit 2: Combinational Digital Circuits</b>                                                                                                                                                                                                                                                             | 8     | CO2            |
| Standard representation for logic functions, K-map representation (up to 4 variables), and simplification of logic functions using K-map, minimization of logical functions. Don't care conditions. Minimization of SOP & POS Expression. Adders, Subtractors, Parity checker/generator, code converters. |       |                |
| <b>Unit 3: Sequential circuits and systems</b>                                                                                                                                                                                                                                                            | 8     | CO3            |
| Multiplexer, De-Multiplexer/Decoders, A 1-bit memory, the clocked SR flip flop, J- K flip flop, T and D types flip-flops, excitation table of flip flops, conversion of flip flops, applications of flip flops.                                                                                           |       |                |
| <b>Unit 4: Registers and Counters</b>                                                                                                                                                                                                                                                                     | 6     | CO4            |
| Shift registers, serial to parallel converter, parallel to serial, converter, ring counter, ripple(Asynchronous) counters, synchronous counters, counters design using flip flops. Introduction to Digital to analog converters                                                                           |       |                |
| <b>Unit 5: Logic Family &amp; Application ICs</b>                                                                                                                                                                                                                                                         | 6     | CO5            |
| Introduction to TTL & CMOS logic families.<br>Introduction various TTL CMOS ICs. Logic Gate, Adder, Counter, FlipFlops, Multiplexer etc.                                                                                                                                                                  |       |                |

### Text Books\*\*

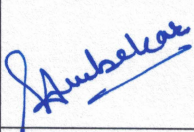
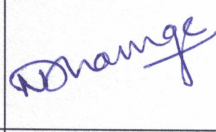
1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.
2. M. M. Mano, "Digital logic and Computer design", Pearson Education India, 2016.
3. H.Taub, "Digital Integrated Electronics" McGraw Hill
4. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

### References Books\*\*

1. Herbert Taub, Donald L Schilling "Digital Integrated Electronics", McGraw Hill, 1977
2. Thomas C Bartee, "Digital Computer Fundamentals", McGraw Hill, 1985.

### Online Resources:

| SN | Topic                              | MOOCs Platform (NPTEL, SWAYAM, UDEMY) | Link                                                                    |
|----|------------------------------------|---------------------------------------|-------------------------------------------------------------------------|
| 1  | Basic Gates & Their representation | NPTEL                                 | <a href="https://youtu.be/KbDjYnevQPg">https://youtu.be/KbDjYnevQPg</a> |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. III<sup>rd</sup> Semester Electrical Engineering**

|                                   |                          |                                             |                      |                          |
|-----------------------------------|--------------------------|---------------------------------------------|----------------------|--------------------------|
| Semester<br>III                   | Subject Code:<br>3BEE02P | Name of Subject:<br>Digital Electronics Lab |                      |                          |
| Total Hours Distribution per week |                          |                                             |                      |                          |
| Total Credit: 1                   | Lecture (L): -           | Tutorial (T) : -                            | Practical (P): 2 Hrs |                          |
| Examination Scheme                |                          |                                             |                      |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                      | Total Marks          | Examination<br>Duration: |
| -                                 | 25 Marks                 | 25 Marks                                    | 50Marks              | ---                      |

| <b>Course Objectives</b> |                                                                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | Learn to design, analyze, and implement various digital circuits and systems, including combinational and sequential logic circuits |

| <b>Course Outcomes</b>                                                   |                                                                                                          |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>After completing the practical course, students will be able to:-</b> |                                                                                                          |
| 1                                                                        | Demonstrate the different Boolean Laws & basics of K-map to realize combinational & Sequential circuits. |
| 2                                                                        | Identify the various digital ICs & understand their operation.                                           |
| 3                                                                        | Describe the operation & timing constraints for latches, registers, different sequential circuits.       |

**Course Competencies:**

- Demonstrate the application of Boolean algebra laws and Karnaugh maps (K-maps) to simplify and realize combinational and sequential logic circuits.
- Identify and analyze the functionality of various digital Integrated Circuits (ICs), including their roles in logic circuit design.
- Describe and evaluate the operation, behavior, and timing constraints of latches, flip-flops, registers, and other sequential circuits.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |
| CO2 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |
| CO3 | 3                                            | 3   | 2   | 2   | 3   | 3   | 1   | 3   | 1   | -    | 3    | 3    | 2    |



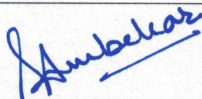
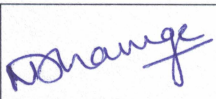
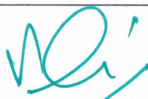
## LIST OF PRACTICALS:

| Pr. No. | List of Practical                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------------------------|
| 1       | To verify NAND(IC 4011) & NOR(IC 4001) gates as a universal gate.                                                            |
| 2       | Implementation of the given Boolean function using logic gates in both Sum of products (SOPs) and Product of Sum (POS) forms |
| 3       | To Design and implementation of code converters using Logic gates.                                                           |
| 4       | To design and verify operation of half adder and full adder(IC CD 4008).                                                     |
| 5       | Implementation of 4-bit parallel adder using CD 4008 IC.                                                                     |
| 6       | To verify and implement 16:1 multiplexer using 8:1 Mux(CD 4051) and 2:1 Mux                                                  |
| 7       | To verify and implement decoder/de-multiplexer and encoder using logic gates.                                                |
| 8       | To explore 4 bit ALU(CD 40181) and verify its function table                                                                 |
| 9       | Verification of state tables of RS, JK, T and D flip-flops using NAND(IC 4011) & NOR(IC 4001) gates.                         |
| 10      | To Design and implement the sequential circuits such as registers and sequence generator.                                    |
| 11      | Simplification and implementation of a Boolean function using k-map technique                                                |
| 12      | To Design and implementation of Binary,BCD adders and Subtractor using IC 4008 and gates.                                    |
| 13      | To Design and implementation binary and BCD comparator using of using CD 4063                                                |
| 14      | Parity generator and checker using X-OR gate(CD 4070)                                                                        |
| 15      | To Design and implementation of ripple and synchronous counters using JK(CD 4027) and D FF(CD 4013) and additional gates     |
| 16      | To Design of counter using ICs like 4029 (ripple) and CD 40192(synchronous)                                                  |
| 17      | To Design and implementations of random sequence counter using JK(CD 4027) and D FF(CD 4013) ICs                             |
| 18      | To Study of shift registers CD 54HC194 for different modes.                                                                  |
| 19      | To Study of characteristics of typical TTL and CMOS IC's like fan out, noise margin, propagation delay                       |

**Note:- Perform any Eight experiment based on the above list.**

### References Books

1. Digital Electronics: A Practical Approach: by William Kleitz ,Prentice Hall or Indian Edition

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B.Tech. IIIrd Semester Electrical Engineering**

|                                   |                            |                                                                       |                   |                          |
|-----------------------------------|----------------------------|-----------------------------------------------------------------------|-------------------|--------------------------|
| Semester<br>III                   | Subject Code:<br>3BMDEE01T | Name of Subject:<br>Principles & Practices in Electrical Engineering. |                   |                          |
| Total Hours Distribution per week |                            |                                                                       |                   |                          |
| Total Credit: 3                   | Lecture (L): 3 Hrs         |                                                                       | Tutorial (T) : -- | Practical (P): --        |
| Examination Scheme                |                            |                                                                       |                   |                          |
| Mid Sem<br>Examination            | Continual<br>Assessment    | End Sem<br>Examination                                                | Total Marks       | Examination<br>Duration: |
| 30 Marks                          | 20 Marks                   | 50 Marks                                                              | 100 Marks         | 3 Hours                  |

| <b>Course Objectives</b> |                                                                                                                               |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 1                        | Providing knowledge & skills to understand, analyze electrical circuit & systems with strong emphasis on protection & safety. |

| <b>Course Outcomes</b>                                                         |                                                                                                             |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>After successful completion of this course the student will be able to:</b> |                                                                                                             |
| 1                                                                              | Acquire the knowledge of electric parameters and laws for electrical circuits.                              |
| 2                                                                              | Analyze and interpret the sinusoidal electrical quantities and parameters for 1- phase/3-phase AC circuits. |
| 3                                                                              | Explain earthing system & their role in electrical safety.                                                  |
| 4                                                                              | Develop the ability to select and apply protective devices in electrical system                             |
| 5                                                                              | Discuss electrical power system.                                                                            |

**Course Competencies: -**

- Evaluate the electrical parameters like voltage, current, resistance, power and apply the Ohm's law, Kirchhoff's laws to the given electrical circuit.
- Analyzing both DC and AC circuits, including series, parallel, and series-parallel circuits.
- Gaining knowledge about power generation, transmission, and distribution, including components like transformers, switchgear, and protection systems.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 2    | 2    | -    |
| CO2 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 2    | 2    | -    |
| CO3 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 2    | -    |
| CO4 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 2    | 2    | -    |
| CO5 | 3                                            | 2   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | -2   | 2    | -    |



## SYLLABUS

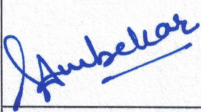
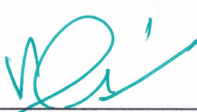
| Details of Topic                                                                                                                                                                                                                                                                                                                                                     | Hours | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit 1: Electrical Circuit Fundamentals-</b>                                                                                                                                                                                                                                                                                                                      | 8     | CO1            |
| Resistance, Inductance & Capacitance, Ohms law, Series & Parallel combination of resistance, , Kirchhoff's Laws & Applications, Energy Sources                                                                                                                                                                                                                       |       |                |
| <b>Unit 2 AC Circuits:-</b>                                                                                                                                                                                                                                                                                                                                          | 6     | CO2            |
| <b>Single phase AC circuit:-</b> Principle of Generation of Single Phase, Average & R.M.S., Values, , concept of Reactance & Impedance, AC Circuit<br><b>Three phase AC circuit:-</b> Principal of Generation of three phase voltage, Phase sequence, Star & Delta Connected three phase system, Voltage, Current & Power relations for balanced three phase system. |       |                |
| <b>Unit 3: Earthing</b>                                                                                                                                                                                                                                                                                                                                              | 8     | CO3            |
| Importance of Neutral and structure Grounding and exposure to various earthing schemes .Domestic & Industrial Earthing and Know the importance of earthing in electrical installations.                                                                                                                                                                              |       |                |
| <b>Unit IV: Protective Devices</b>                                                                                                                                                                                                                                                                                                                                   | 8     | CO3            |
| Working of various electrical circuit protective devices (Fuse, MCB, ELCB, RCCB etc.) MCB, ELCB & RCCB working (Necessity, importance and selection according to load condition)                                                                                                                                                                                     |       |                |
| <b>Unit 5: Introduction to Electrical Power System :</b>                                                                                                                                                                                                                                                                                                             | 6     | CO4            |
| Brief exposure to generation, transmission and distribution aspects, Conventional & Non-conventional energy sources (Solar, Wind). Overhead and Underground transmission system, Substation and its equipment's.(only 11KV/440V)                                                                                                                                     |       |                |

### Text Books

1. A Text book of Electrical Technology , B. L. Thareja & A. K. Thareja, S. Chand publication, Volume 1 & Volume 2.
2. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill Pvt. Ltd.
3. A Text book on Basic Electrical Engineering an Elementary Concept, Dr. C. S. Hiwarkar, Prof. G. Gadge, Prof. S. K. Mude, Dr. V. Umale, Alliance & Company.
4. Basic Electrical Engineering ,D.P.Kothri and I.J. Nagrath, Tata McGraw Hill Pvt. Ltd. 4<sup>th</sup> Edition 2019

### References Books

1. Basic Electrical Engineering, V. N. Mittal, Arvind Mittal, Tata McGraw Hill Pvt. Ltd. 2<sup>nd</sup> Edition.
2. Basic Electrical Engineering, T. K. Nagsarkar, M. S. Sukhija, Oxford Univresity Press 3<sup>rd</sup> Edition.
3. Basic Electrical Engineering A Web course of NPTEL by Day, Bhattacharya & Roy, Available:- [www. nptel.ac.in](http://www.nptel.ac.in)

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



# KDK College of Engineering, Nagpur

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|                             |                              |                                              |                  |                       |
|-----------------------------|------------------------------|----------------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - A | Name of Subject:<br>Principles of Management |                  |                       |
| Total Distribution per week |                              |                                              |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                              | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                              |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                     | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                                     | 100 Marks        | 3 Hrs                 |

| Course Objectives |                                                                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | To enable students, understand the fundamental concepts of management, including the evolution and managerial roles and functions.                       |
| 2                 | To enable students to learn the principles, processes, and types of planning and decision-making in managerial contexts.                                 |
| 3                 | To analyze different organizational structures and processes including staffing, delegation, and departmentalization.                                    |
| 4                 | To understand behavioral aspects of directing, including motivation, leadership, and communication.                                                      |
| 5                 | To make them learn various control mechanisms, including budgeting and performance monitoring, to improve organizational productivity and effectiveness. |

| Course Outcomes                                           |                                                                                                                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                                               |
| 1                                                         | Define and explain the core concepts of management and distinguish between managers and administrators.                                       |
| 2                                                         | Demonstrate knowledge of planning, including setting objectives, formulating policies, and applying planning tools and techniques.            |
| 3                                                         | Analyse different organizational structures and processes including staffing, delegation, and departmentalization.                            |
| 4                                                         | Understand behavioural aspects of directing, including motivation, leadership, and communication.                                             |
| 5                                                         | Utilize various control mechanisms, including budgeting and performance monitoring, to improve organizational productivity and effectiveness. |

| Course Competencies |                                                                                                                                                           |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                   | Apply foundational knowledge of management principles and develop the ability to plan, organize, lead, and control organizational activities effectively. |
| 2                   | Implement communication skills, leadership skills, decision-making skills and performance monitoring skills to improve productivity and efficiency        |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | 2                  | -   | -   | -   | -   | 2   | 2   | -   | -   | 3    | 3    |
| CO2           | 2                  | 2   | -   | -   | 3   | -   | -   | -   | -   | 3    | 3    |
| CO3           | -                  | 3   | -   | -   | -   | -   | -   | 3   | -   | 3    | 3    |
| CO4           | -                  | -   | -   | -   | -   | -   | 3   | 3   | 3   | -    | 3    |
| CO5           | -                  | 2   | -   | -   | -   | -   | -   | -   | -   | 3    | 3    |

| Course Contents                                                                                                                                                                                                                                                                                                                            |   | Mapped with CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I : Introduction to Management:</b>                                                                                                                                                                                                                                                                                                | 8 | CO1            |
| Definition, Nature, Importance, Scope of Management – managerial roles and skills- Science or Art – Manager Vs Administrator – Evolution of Management – Scientific, human relations, system and contingency approaches (contributions of F.W Taylor, Henry Fayol, Elton Mayo, Glibert and McGregor) - Levels and Functions of Management. |   |                |
| <b>Unit II : Planning:</b>                                                                                                                                                                                                                                                                                                                 | 8 | CO2            |
| Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Planning Tools and Techniques – Decision making steps and process.                                                                                                                                |   |                |
| <b>Unit III : Organizing:</b>                                                                                                                                                                                                                                                                                                              | 8 | CO3            |
| Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Span of Management - Job design- Recruitment, selection, Training and Compensation.                         |   |                |
| <b>Unit IV : Directing:</b>                                                                                                                                                                                                                                                                                                                | 8 | CO4            |
| Foundations of individual and group behavior – motivation – motivational techniques – job enlargement – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication.                                                                    |   |                |
| <b>Unit V : Controlling:</b>                                                                                                                                                                                                                                                                                                               | 8 | CO5            |
| System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.                                                                                           |   |                |

| Text Books |                                                                                               |
|------------|-----------------------------------------------------------------------------------------------|
| 1          | Principles and Practice of Management: L M Prasad, Sultan Chand & Sons educational. New Delhi |
| 2          | Principles of Management, Ramaswamy T., Himalaya Publication                                  |



|                        |                                                                                                                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 3                      | Essentials of Management, Harold Koontz, O'Donnell and Heinz Weihrich, 2012, New Delhi, 9th edition, Tata McGraw Hill |
| 4                      | Fundamentals of Management, Stephen P. Robbins, David A. Decenzo, 2016, Pearson Education, 9th Edition                |
| 5                      | Management Today- Principles and Practice / Edition-13th reprint                                                      |
| <b>Reference Books</b> |                                                                                                                       |
| 1                      | Management - Text & Cases, Satya Raju, PHI, New Delhi                                                                 |
| 2                      | Management Fundamentals: Concepts, Applications, & Skill Development, 6th edition, Sage. 2014                         |
| 3                      | Principles Of Management, Richard L. Daft, Cengage Learning, 2009                                                     |

|                                                                                   |                                                                                   |                                                                                   |                 |         |                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
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|                             |                              |                                                     |                  |                       |
|-----------------------------|------------------------------|-----------------------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - B | Name of Subject:<br>Professional Practices & Ethics |                  |                       |
| Total Distribution per week |                              |                                                     |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                                     | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                                     |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                            | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                                            | 100 Marks        | 3 Hrs                 |

| Course Objectives |                                                                                                         |
|-------------------|---------------------------------------------------------------------------------------------------------|
| 1                 | To understand the basic purpose of profession, professional ethics and various moral and social issues. |
| 2                 | To analyze various moral issues and theories of moral development                                       |
| 3                 | To realize their roles of applying ethical principles at various professional levels                    |
| 4                 | To identify their responsibilities for safety and risk benefit analysis.                                |
| 5                 | To understand their constructive roles in dealing various global issues.                                |

| Course Outcomes                                           |                                                                                                  |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                  |
| 1                                                         | Understand basic purpose of profession, professional ethics and various moral and social issues. |
| 2                                                         | Analyze various moral issues and theories of moral development.                                  |
| 3                                                         | Realize their roles of applying ethical principles at various professional levels.               |
| 4                                                         | Identify their responsibilities for safety and risk benefit analysis.                            |
| 5                                                         | Understand their constructive roles in dealing various global issues.                            |

| Course Competencies |                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                   | Apply professional ethics, moral values, and social responsibilities while dealing with real-world scenarios in their respective professions.            |
| 2                   | Analyze ethical issues critically and perform risk-benefit analysis to make informed and responsible decisions in professional settings.                 |
| 3                   | Demonstrate responsible behaviour and actively contribute to addressing global and societal challenges through ethical and socially conscious practices. |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | 1                  | -   | -   | -   | -   | 2   | 3   | 1   | 1   | -    | 3    |
| CO2           | -                  | 2   | -   | -   | -   | -   | 3   | -   | 1   | -    | 2    |
| CO3           | -                  | -   | -   | -   | -   | -   | 3   | 1   | 2   | -    | 1    |
| CO4           | -                  | -   | 2   | -   | 2   | -   | 2   | -   | -   | -    | 3    |
| CO5           | -                  | -   | -   | -   | -   | 3   | 3   | 1   | 1   | -    | 3    |

| Course Contents                                                                                                                                                                                                                                                                    |   | Mapped with CO |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I : Human Values and Ethics:</b>                                                                                                                                                                                                                                           | 8 | CO1            |
| Human Values, Morals, values and Ethics, Integrity, Work ethics. Service learning, Civic virtue, Respect for others, living peacefully, Caring, Sharing, Honesty, Courage                                                                                                          |   |                |
| <b>Unit II : Engineering Ethics:</b>                                                                                                                                                                                                                                               | 8 | CO2            |
| Engineering Ethics, Senses of 'Engineering Ethics', Variety of moral issues, Moral dilemmas, Moral Autonomy, Kohlberg's theory, Gilligan's theory                                                                                                                                  |   |                |
| <b>Unit III : Engineering as Social Experimentation:</b>                                                                                                                                                                                                                           | 8 | CO3            |
| Engineering as Social Experimentation, Engineering as Experimentation, Engineers as responsible Experimenters, Codes of Ethics, A Balanced Outlook on Law (Industrial Disputes Act, 1947; 07 3 Industrial Employment (Standing Orders) Act, 1946; Workmen's Compensation Act, 1923 |   |                |
| <b>Unit IV : Safeties, Responsibilities and Rights:</b>                                                                                                                                                                                                                            | 8 | CO4            |
| Safety, Responsibilities and rights, Safety and Risk, Assessment of Safety and Risk. Risk Benefit Analysis and Reducing Risk, Collective Bargaining, Professional Rights, Employee Rights                                                                                          |   |                |
| <b>Unit V : Global Issues and Professional Responsibilities:</b>                                                                                                                                                                                                                   | 8 | CO5            |
| Global issues, Multinational Corporations, Computer Ethics, Weapons Development, Engineers as Managers, Consulting Engineers, Engineers as Expert Witnesses and Advisors                                                                                                           |   |                |

| Text Book/ Reference Books |                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------|
| 1                          | Professional Ethics, R. Subramaniam, Oxford Publications. New Delhi.                              |
| 2                          | Human Values and Professional Ethics by Jayshree Suresh and B. S. Raghavan, S. Chand Publications |
| 3                          | Human Values & Professional Ethics by S. B. Gogate, Vikas Publishing House Pvt. Ltd., Noida.      |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| Chairman<br>BoS                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                         |



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|                             |                              |                                                      |                  |                       |
|-----------------------------|------------------------------|------------------------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - C | Name of Subject:<br>Insurance and Banking Management |                  |                       |
| Total Distribution per week |                              |                                                      |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                                      | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                                      |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                             | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                                             | 100 Marks        | 3 Hrs                 |

| Course Objectives |                                                                                                                                         |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | To introduce the structure and functioning of the banking industry, with a focus on commercial and corporate banking in India.          |
| 2                 | To understand key commercial banking operations and regulatory frameworks like KYC, AML, FEMA, and payment systems (NEFT, RTGS, SWIFT). |
| 3                 | To explore banking risk management practices, including ALM, NPA management, credit risk, and other financial risks.                    |
| 4                 | To provide insights into insurance fundamentals, types of insurance policies, and risk measurement techniques                           |
| 5                 | To examine the operational aspects of insurance companies including underwriting and claims management.                                 |

| Course Outcomes                                           |                                                                                                                           |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                           |
| 1                                                         | Explain the structure and types of banking institutions in India and the concept of core and universal banking.           |
| 2                                                         | Describe key operations in commercial banking and apply regulatory norms such as KYC, AML, RTGS, NEFT, and FEMA.          |
| 3                                                         | Evaluate asset-liability management processes and prudential norms related to NPAs and credit risk management.            |
| 4                                                         | Illustrate the concepts and types of life and general insurance, and understand premium calculation and risk measurement. |
| 5                                                         | Analyze the operational aspects of insurance companies including underwriting principles and claims settlement processes. |

| Course Competencies |                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------|
| 1                   | Understand the structure and regulations of banking and insurance in India.                    |
| 2                   | Apply risk management practices and compliance frameworks like KYC, AML, FEMA, NIFT, and RTGS. |
| 3                   | Analyze insurance policies and claims processes to evaluate financial and operational risks.   |

| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | -   | 2   | -   | -   | -   | 2    | 3    |
| CO2           | -                  | -   | -   | -   | 2   | 2   | 2   | -   | -   | 3    | 3    |
| CO3           | -                  | -   | -   | -   | 2   | 2   | -   | -   | -   | 3    | 3    |
| CO4           | -                  | -   | -   | -   | 3   | 2   | 2   | -   | -   | 3    | 2    |
| CO5           | -                  | -   | -   | -   | 3   | 2   | 2   | -   | -   | 3    | 2    |

| Course Contents                                                                                                                                                                                                                                                                                                                                                                                                      |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I : Introduction to Banking:</b><br><br>Banking Industry: Structure of Banking Industry - Public and Private Sectors<br>Banks in India - Corporate Banking and Universal Banking - Core Banking<br><br>Innovation in Banking: E-Banking - Delivery Channels - ATM - EFTPOS -<br>Phone Banking - Internet Banking - SMS Banking - Mobile Banking -<br>Credit/Debit Cards - Smart Cards - UPI - Bancassurance. | 8 | CO1            |
| <b>Unit II : Commercial Banking Operations:</b><br><br>Banking Operations: Payment and Settlement System - New Age Clearing -<br>New Age Payment - RTGS - NIFT - SWIFT - NTGS - KYC Norms and Anti<br>- Money Laundering - FEMA.<br><br>Asset Liability Management (ALM): Concept - Organization and Techniques -<br>Provision for NPA's - NPA's in Commercial Banks - Causes and Suggestions<br>- Prudential Norms. | 8 | CO2            |
| <b>Unit III : Management of Banking Organization:</b><br><br>Credit Risk Management: Introduction - Capital Adequacy Norms -<br>Standardized and Advanced Approaches for Credit Risk - Credit Rating/Credit<br>Scoring - Rating System Design. Loan Management: Contents of Loan Policy<br>- Evaluating Credit Applicant Market Risk - Liquidity Risk - Interest Rate Risk<br>- FOREX Risk.                          | 8 | CO3            |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| Unit IV Introduction to Insurance:                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 8 | CO4 |
| Introduction, Concept - Nature - Scope and Significance - Investment Patterns - Types of Policies. Life insurance: Premium Calculations - Annuities - Measurement of Risk and Morality Table. General Insurance: Fire Insurance - Conditions of Fire Insurance - Subrogation and Reinsurance - Accident and Motor Insurance - Types of Motor Insurance - Factors to be considered for Premium Fixing - Concept of Health Insurance - Group Insurance - Home Insurance - Catastrophe Insurance |   |     |
| Unit V : Management of Insurance Companies:                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8 | CO5 |
| Underwriting: Functions - Principles - Underwriting in Life Insurance - Underwriting in Non-Life Insurance. Claims Management: Claim Settlement in General Insurance - Accident Benefit - Disability Benefit - Permanent Disability Benefit - Claim Settlement in Life Insurance - Maturity Claims and Death Claims.                                                                                                                                                                          |   |     |

| Text/ Reference Books |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1                     | N.R. Mohan Prakash, Banking, Risk and Insurance Management, Vikas Publishing                                                           |
| 2                     | M.N. Mishra & S.B. Mishra, Insurance: Principles and Practice, S. Chand & Co                                                           |
| 3                     | Sunil Kumar, Essentials of Banking and Insurance, JSR Publishing House                                                                 |
| 4                     | Bank Management and Financial Services (Indian Edition), Peter Rose & Sylvia Hudgins, 8th Edition, McGraw Hill Education               |
| 5                     | Principles And Practice of Bank Management, 2nd Revised Edition, Dr. P. Subba Rao & Dr. Promod Kumar Khanna, Himalaya Publishing House |

|                                                                                     |                                                                                     |                                                                                     |                    |         |                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| Chairman BoS                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of<br>release | Version |                                         |

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|                             |                                  |                                                  |             |                       |
|-----------------------------|----------------------------------|--------------------------------------------------|-------------|-----------------------|
| Semester III                | Subject Code:<br><br>3BOE01T - D | Name of Subject:<br><br>Total Quality Management |             |                       |
| Total Distribution per week |                                  |                                                  |             |                       |
| Total Credit: 3             | Lecture (L): 3                   | Tutorial (T): 0                                  |             | Practical (P): 0      |
| Examination Scheme          |                                  |                                                  |             |                       |
| Continuous Assessment       | Mid Semester Examination         | End Semester Examination                         | Total Marks | Examination Duration: |
| 20 Marks                    | 30 Marks                         | 50 Marks                                         | 100 Marks   | 3 Hrs                 |

| <b>Course Objectives</b> |                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------|
| 1                        | Understand the principles, history, and key contributors of Total Quality Management (TQM)        |
| 2                        | Learn and apply essential quality tools like Kaizen, Six Sigma, and cost analysis.                |
| 3                        | Manage customer satisfaction, employee involvement, and supplier relationships.                   |
| 4                        | Use quality improvement techniques such as control charts and the DMAIC process.                  |
| 5                        | Apply advanced TQM tools like Benchmarking, QFD, TPM, and FMEA to enhance quality and reliability |

| <b>Course Outcomes</b>                                    |                                                                                                                                                      |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                                                      |
| 1                                                         | Develop an understanding about Quality management in corporate world.                                                                                |
| 2                                                         | Employ various techniques being used in Total Quality Management.                                                                                    |
| 3                                                         | Engage into control of processes in manufacturing and operations                                                                                     |
| 4                                                         | Audit control systems and Quality management                                                                                                         |
| 5                                                         | Apply TQM tools like Benchmarking, QFD, Taguchi Loss Function, TPM, and FMEA to improve quality and reliability in industrial and service processes. |

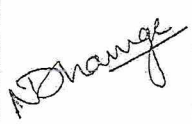
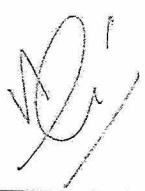
| <b>Course Competencies</b> |                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------|
| 1                          | Apply Total Quality Management (TQM) principles in real-world corporate settings.         |
| 2                          | Operate quality tools and techniques to improve processes and ensure product reliability. |
| 3                          | Evaluate and audit quality systems to support continuous improvement.                     |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | 1                  | -   | 2   | -   | 2   | 1   | -   | -   | -   | 1    | 1    |
| CO2           | -                  | 2   | 2   | -   | 3   | 1   | -   | -   | -   | 2    | 2    |
| CO3           | -                  | 2   | 3   | -   | 2   | 1   | 1   | 2   | -   | 2    | 2    |
| CO4           | -                  | 2   | 2   | 2   | 2   | 1   | 1   | -   | -   | 2    | 2    |
| CO5           | -                  | 2   | 3   | -   | 3   | 1   | 1   | -   | 2   | 2    | 2    |

| Course Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I: Introduction to Total Quality Management</b><br>Introduction to Total Quality Management, A brief history, the concept of quality, evolution of total quality, principles of total quality, Gurus of total quality management, their philosophies and contributions, characteristics of quality leader, customer satisfaction, customer perception of quality, feedback, customer complaints.                                                                                                                                     | 8 | CO1            |
| <b>Unit II: Tools of Quality Management</b><br>Process, Problem solving method, Kaizen, Six Sigma, performance measures, Cost of Quality, Tools for Quality Assurance,                                                                                                                                                                                                                                                                                                                                                                       | 8 | CO2            |
| <b>Unit III: Customers and Suppliers Management</b><br>TQM Principles - Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement –Juran Trilogy, PDCA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy | 8 | CO3            |
| <b>Unit IV: Quality Improvement Techniques</b><br>Quality Improvement Techniques - Control Charts for Variables – Definitions, Variation: Common vs. Special Causes, Process capability, Concept of six sigma - Introduction, advantages of six sigma, six sigma DMAIC process                                                                                                                                                                                                                                                               | 8 | CO4            |
| <b>Unit V: Total Productive Maintenance</b><br>TQM Tools - Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA                                                                                                                                                                                                                     | 8 | CO5            |

| Text Books      |                                                                                                                                                       |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1               | Dale H. Besterfield, et al., Total Quality Management Pearson Education Asia, 1999: (Indian Areprint 2002)                                            |
| 2               | Total Quality Management by Dale H. Besterfield, 2019, Perason                                                                                        |
| Reference Books |                                                                                                                                                       |
| 1               | James R. Evans & William M. Lidsay, The Management and Control of Quality, (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5) |
| 2               | Feigenbaum. A. V. "Total Quality Management", McGraw-Hill, 1991                                                                                       |
| 3               | Oakland. J. S. "Total Quality Management" Butterworth – Heinemann Ltd., Oxford. 1989                                                                  |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| Chairman BoS                                                                      | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                         |



**KDK College of Engineering, Nagpur**

**B. Tech.**

**CE/ ME/ EE/ CSE/ IT/ AI&DS/ ETC Engineering**

|                             |                              |                                           |                  |                       |
|-----------------------------|------------------------------|-------------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - E | Name of Subject:<br>Campus Sustainability |                  |                       |
| Total Distribution per week |                              |                                           |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                           | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                           |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                  | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                                  | 100 Marks        | 3 Hrs                 |

| <b>Course Objectives</b> |                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| 1                        | Develop an understanding of the principles and practices of sustainability in the context of educational institutions. |
| 2                        | Build awareness of ecological, economic, and social sustainability challenges on campuses.                             |
| 3                        | Enable students to assess and reduce the environmental footprint of academic activities.                               |
| 4                        | Introduce tools and strategies for energy, water, and waste efficiency within campuses.                                |
| 5                        | Promote student engagement and leadership in sustainability initiatives.                                               |

| <b>Course Outcomes</b>                                    |                                                                                           |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                           |
| 1                                                         | Explain the concept of sustainability and its relevance to campus ecosystems.             |
| 2                                                         | Evaluate current campus practices in energy, water, and waste management.                 |
| 3                                                         | Analyze the application of green infrastructure and sustainable mobility in institutions. |
| 4                                                         | Propose practical and technical strategies for improving campus sustainability.           |
| 5                                                         | Demonstrate environmental responsibility through individual and group actions.            |

| <b>Course Competencies</b> |                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------|
| 1                          | Understand the concept of sustainability and its application to campus ecosystems.  |
| 2                          | Evaluate and improve energy, water, and waste practices within institutions.        |
| 3                          | Apply green infrastructure strategies and promote sustainable mobility on campuses. |

| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | -   | 3   | 3   | -   | 2   | -    | 2    |
| CO2           | -                  | -   | -   | -   | -   | 2   | 3   | -   | -   | 2    | 2    |
| CO3           | -                  | -   | -   | 2   | -   | 2   | 2   | -   | 2   | 2    | 2    |
| CO4           | -                  | -   | -   | 2   | -   | 2   | 2   | -   | 2   | 3    | 2    |
| CO5           | -                  | -   | -   | -   | -   | 2   | 3   | 3   | 3   | 2    | -    |

| Course Contents                                                                                                                                                                                                                                                                                                                |   | Mapped with CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I: Foundations of Sustainability</b><br>Introduction to sustainability: environmental, economic, social dimensions, The role of academic institutions in promoting sustainability, UN Sustainable Development Goals (SDGs) and Education for Sustainable Development (ESD), Examples of sustainable campuses worldwide | 8 | CO1            |
| <b>Unit II: Energy Management in Campus Infrastructure</b><br>Campus energy audits: methods and case studies, Renewable energy integration: solar, wind, biomass, Energy conservation in labs, hostels, and classrooms, Smart grids, sensors, and building automation systems                                                  | 8 | CO2            |
| <b>Unit III: Water Conservation and Solid Waste Management</b><br>Water audits and sustainable usage, Rainwater harvesting systems and greywater reuse, Solid waste segregation, composting, and recycling models, E-waste handling and hazardous waste precautions                                                            | 8 | CO3            |
| <b>Unit IV: Green Buildings and Sustainable Transportation</b><br>Concepts of green building: LEED, GRIHA, EDGE certifications, Use of sustainable construction materials, Campus biodiversity and green landscaping<br>Bicycle-friendly campuses, EV charging, carpool systems                                                | 8 | CO4            |
| <b>Unit V: Community Engagement and Behavior Change</b><br>Building a green culture through clubs and campaigns, Institutional policies and green charters, Sustainability reporting and auditing tools, Design and presentation of a campus sustainability project                                                            | 8 | CO5            |



| Text book/Reference Books |                                                                                                                     |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| 1                         | Geng, Yong, and Brent, Daniel. Sustainable Campus: Theory and Practice. Springer, 2021.                             |
| 2                         | Agyeman, Julian et al. Local Environment: The International Journal of Justice and Sustainability (Selected papers) |
| 3                         | United Nations. UN Sustainable Development Goals Reports – <a href="https://sdgs.un.org/">https://sdgs.un.org/</a>  |
| 4                         | National Institute of Urban Affairs. Campus Sustainability Guidelines for Indian Institutions                       |
| 5                         | AICTE & TERI Green Campus Manual (India-specific guidelines)                                                        |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
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**KDK College of Engineering, Nagpur**

**B. Tech.**

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|                             |                              |                                         |                  |                       |
|-----------------------------|------------------------------|-----------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - F | Name of Subject:<br>Indian Stock Market |                  |                       |
| Total Distribution per week |                              |                                         |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                         | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                         |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                                | 100 Marks        | 3 Hrs                 |

| <b>Course Objectives</b> |                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------|
| 1                        | Provide an in-depth understanding of the Indian capital and stock market structure.            |
| 2                        | Equip students with knowledge of equity, derivatives, mutual funds, and trading platforms.     |
| 3                        | Build analytical skills through fundamental and technical evaluation of securities.            |
| 4                        | Develop understanding of portfolio construction and investment strategies                      |
| 5                        | Familiarize students with the regulatory framework, investor protection, and ethical investing |

| <b>Course Outcomes</b>                                    |                                                                                        |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                        |
| 1                                                         | Explain the structure and functions of Indian stock markets and financial instruments. |
| 2                                                         | Demonstrate knowledge of trading mechanisms and regulatory compliance.                 |
| 3                                                         | Apply technical and fundamental analysis to evaluate investment opportunities.         |
| 4                                                         | Analyze and compare financial products like mutual funds, ETFs, and derivatives        |
| 5                                                         | Construct and manage a diversified portfolio applying key risk-return concepts.        |

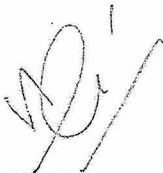
| <b>Course Competencies</b> |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| 1                          | Understand the structure and functions of the Indian stock market and its financial instruments. |
| 2                          | Apply analytical tools and trading knowledge to evaluate investments and build portfolios.       |
| 3                          | Demonstrate understanding of regulatory compliance and ethical investing practices.              |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | 2                  | 1   | 2   | -   | -   | 2   | -   | -   | -   | 1    | 2    |
| CO2           | 2                  | 1   | 2   | -   | -   | 3   | -   | -   | 2   | 2    | 3    |
| CO3           | 1                  | 2   | 3   | -   | -   | 2   | -   | -   | -   | 3    | 3    |
| CO4           | 1                  | 1   | 2   | -   | -   | 2   | -   | -   | -   | 2    | 3    |
| CO5           | 2                  | 1   | 3   | -   | -   | 2   | -   | -   | -   | 3    | 3    |

| Course Contents                                                                                                                                                                                                                                                                        |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| <b>Unit I: Overview of Financial Markets &amp; Stock Exchanges</b>                                                                                                                                                                                                                     | 8 | CO1            |
| Introduction to financial markets: Money vs. Capital market, Primary & Secondary markets, Stock exchanges in India: NSE, BSE, MCX, Role of SEBI and regulatory framework, Market participants: FIIs, DIIs, retail, HNIs<br>Demat & Trading accounts, clearing & settlement (T+1 cycle) |   |                |
| <b>Unit II: Equity Market Instruments &amp; Trading Mechanism</b>                                                                                                                                                                                                                      | 8 | CO2            |
| Types of securities: Equity, preference shares, debentures, IPO Process and Book Building, Market indices: Nifty, Sensex (construction & relevance), Order types: market, limit, stop-loss, Trading mechanisms: intraday vs. delivery, Circuit breakers, price bands, margin systems   |   |                |
| <b>Unit III: Technical &amp; Fundamental Analysis</b>                                                                                                                                                                                                                                  | 8 | CO3            |
| Charts: Line, bar, candlestick, Patterns: head & shoulders, double top/bottom, triangles, Indicators: Moving Average, RSI, MACD, Bollinger Bands<br>Fundamental analysis: P&L statement, Balance Sheet, Cash Flow<br>Key ratios: EPS, P/E, ROE, Debt-equity ratio, DCF Model basics    |   |                |
| <b>Unit IV: Derivatives and Mutual Funds</b>                                                                                                                                                                                                                                           | 8 | CO4            |
| Introduction to Derivatives: Futures and Options, Hedging, speculation, arbitrage, Option chain, Greeks (basic understanding), Mutual funds: Types, NAV, SIP, SWP, AUM, ETFs and Index Funds, Fund selection and performance metrics                                                   |   |                |
| <b>Unit V: Portfolio Management &amp; Regulatory Environment</b>                                                                                                                                                                                                                       | 8 | CO5            |
| Risk-return analysis and investor profiling, Asset allocation & diversification strategies, Basics of portfolio construction, Regulatory bodies: SEBI, AMFI, NISM, Insider trading, corporate governance, taxation (STCG, LTCG), Investor protection and grievance redressal           |   |                |

| Text Books      |                                                                                        |
|-----------------|----------------------------------------------------------------------------------------|
| 1               | Indian Financial System" By M. Y. Khan                                                 |
| 2               | McGraw Hill Education (Covers capital markets, SEBI, trading mechanisms, mutual funds) |
| Reference Books |                                                                                        |
| 1               | "Security Analysis and Portfolio Management" – S. Kevin, PHI Learning                  |
| 2               | "Fundamentals of Financial Markets" – V. A. Avadhani, Himalaya Publishing              |
| 3               | "Fundamental Analysis for Investors" – Raghunathan V., McGraw Hill                     |
| 4               | NSE Academy Certified Capital Market Professional (E-NCCMP) modules                    |
| 5               | NISM Series: Equity Derivatives & Mutual Funds Distributor Study Material              |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
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KDK College of Engineering, Nagpur

B. Tech.

CE/ ME/ EE/ CSE/ IT/ AI&DS/ ETC Engineering

|                             |                              |                                    |                  |                       |
|-----------------------------|------------------------------|------------------------------------|------------------|-----------------------|
| Semester III                | Subject Code:<br>3BOE01T - G | Name of Subject:<br>Climate Change |                  |                       |
| Total Distribution per week |                              |                                    |                  |                       |
| Total Credit: 3             | Lecture (L): 3               | Tutorial (T): 0                    | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                    |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination           | Total Marks      | Examination Duration: |
| 20 Marks                    | 30 Marks                     | 50 Marks                           | 100 Marks        | 3 Hrs                 |

| Course Objectives |                                                                                          |
|-------------------|------------------------------------------------------------------------------------------|
| 1                 | Understand the scientific principles underlying climate change.                          |
| 2                 | Explore the causes and evidence of global warming and climate change.                    |
| 3                 | Analyze the impacts of climate change on ecosystems, societies, and economies            |
| 4                 | Examine national and international climate policies, treaties, and frameworks.           |
| 5                 | Identify engineering and technological strategies for climate mitigation and adaptation. |

| Course Outcomes                                           |                                                                                                            |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                            |
| 1                                                         | Explain the basic science of climate systems and greenhouse effect.                                        |
| 2                                                         | Interpret evidence and data supporting global climate change.                                              |
| 3                                                         | Assess environmental, social, and economic impacts of climate change.                                      |
| 4                                                         | Describe national and international responses and frameworks like UNFCCC, Kyoto Protocol, Paris Agreement. |
| 5                                                         | Propose technological and policy-based solutions to mitigate and adapt to climate change.                  |

| Course Competencies |                                                                                        |
|---------------------|----------------------------------------------------------------------------------------|
| 1                   | Inculcate the scientific basis of climate systems and global warming.                  |
| 2                   | Analyze climate change impacts and interpret related environmental data.               |
| 3                   | Evaluate global climate policies and propose strategies for mitigation and adaptation. |

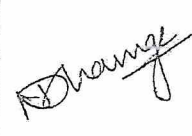
| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | 2   | -   | -   | -   | -   | -   | -   | -   | -    | 2    |
| CO2           | -                  | 3   | -   | 2   | 2   | -   | -   | -   | -   | -    | 3    |
| CO3           | -                  | 2   | -   | -   | 3   | 2   | -   | -   | 2   | 2    | -    |
| CO4           | -                  | -   | -   | -   | 3   | 3   | -   | -   | -   | 2    | 2    |
| CO5           | -                  | 2   | 3   | 2   | 2   | 3   | 3   | 1   | 1   | 2    | -    |

| Course Contents                                                                                                                                                                                          |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I: Climate Science Fundamentals                                                                                                                                                                     | 8 | CO1            |
| Earth's energy balance and the greenhouse effect, Natural vs anthropogenic causes of climate change, Role of carbon cycle and feedback mechanisms, Climate models and prediction tools                   |   |                |
| Unit II: Evidence of Climate Change                                                                                                                                                                      | 8 | CO2            |
| Observed temperature and precipitation trends, Melting glaciers, sea-level rise, ocean acidification, IPCC reports and global climate data sources, Regional climate change patterns in India            |   |                |
| Unit III: Impacts of Climate Change                                                                                                                                                                      | 8 | CO3            |
| Environmental: biodiversity, forests, oceans, Social: health, migration, and agriculture, Economic: infrastructure, energy, and livelihoods, Case studies: floods, droughts, cyclones                    |   |                |
| Unit IV: Climate Change Governance                                                                                                                                                                       | 8 | CO4            |
| Global treaties: UNFCCC, Kyoto Protocol, Paris Agreement, National policies: NAPCC, SAPCCs (India's response), Role of international bodies: IPCC, UNEP, COP summits, Climate finance and carbon trading |   |                |
| Unit V: Mitigation and Adaptation Strategies                                                                                                                                                             | 8 | CO5            |
| Renewable energy technologies and carbon capture, Sustainable urban and industrial design, Disaster-resilient infrastructure, Behavioral and lifestyle changes, Role of engineers in climate innovation  |   |                |

| Text Books |                                                                                     |
|------------|-------------------------------------------------------------------------------------|
| 1          | 1. Climate Change: From Science to Sustainability" by A. Barrie Pittock – Earthscan |
| 2          | "Global Warning: Understanding the Forecast" by David Archer – Wiley                |
| 3          | "Introduction to Climate Change" by D. G. Martin – Oxford University Press          |



| Reference Books |                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------|
| 1               | IPCC Sixth Assessment Report (AR6) – <a href="https://www.ipcc.ch">https://www.ipcc.ch</a>                     |
| 2               | India's National Action Plan on Climate Change (NAPCC) – <a href="https://moef.gov.in">https://moef.gov.in</a> |
| 3               | "The Climate Solution" by Mridula Ramesh – Hachette India                                                      |
| 4               | UN SDG Goal 13 Reports – <a href="https://sdgs.un.org/goals/goal13">https://sdgs.un.org/goals/goal13</a>       |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
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| Chairman BoS                                                                      | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                         |

**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Entrepreneurship/ Economics/ Management (EEM)**

|                                   |                                          |                                                  |                   |                          |
|-----------------------------------|------------------------------------------|--------------------------------------------------|-------------------|--------------------------|
| Semester<br>III/IV                | Subject Code:<br>3BEM01T-A<br>/4BEM02T-A | Name of Subject: Entrepreneurship<br>Development |                   |                          |
| Total Hours Distribution per week |                                          |                                                  |                   |                          |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                                  | Tutorial (T) : -- | Practical (P): --        |
| Examination Scheme                |                                          |                                                  |                   |                          |
| Mid Semester<br>Examination       | Continuous<br>Assessment                 | End Semester<br>Examination                      | Total Marks       | Examination<br>Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                                         | 50 Marks          | 2 Hours                  |

| <b>Course Objectives</b> |                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | To enable the students to understand the concept of Entrepreneurship and to learn the Professional behaviour expected of an entrepreneur.           |
| 2                        | To identify significant changes and trends which create business opportunities and to analyze the environment for potential business opportunities. |
| 3                        | To provide conceptual exposure on converting idea to a successful entrepreneurial firm                                                              |
| 4                        | To provide information about various funding sources                                                                                                |

| <b>Course Outcomes</b>                                           |                                                                                                                 |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>After completion of syllabus, the student will be able to</b> |                                                                                                                 |
| CO1                                                              | Understand the basic concepts of entrepreneurship and business opportunities                                    |
| CO2                                                              | Understands the ideas to develop & convert the successful business ideas                                        |
| CO3                                                              | Understand & solve problems related to market, technical aspects & assessment of project feasibility            |
| CO4                                                              | Prepare project reports for starting a new venture on team based & raising the funds for starting the business. |



| Course Competency |                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand the fundamentals of entrepreneurship, its types, traits, cultural aspects, and challenges including the role of women and SHGs in economic development. |
| 2                 | Develop the ability to recognize business opportunities, generate innovative ideas, and protect intellectual property through patents and IPR.                     |
| 3                 | Evaluate and analyze business opportunities using tools like market, technical, cost-benefit, and network analyses to determine project feasibility.               |
| 4                 | Acquire skills to prepare business plans and understand funding options including.                                                                                 |

| Programme Outcome |     |     |     |     |     |     |     |     |     |      |      |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO/PO             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1               | -   | -   | -   | -   | -   | 1   | 2   | -   | -   | 1    | 2    |
| CO2               | -   | -   | -   | -   | -   | 2   | -   | 2   | -   | -    | 3    |
| CO3               | -   | 1   | -   | -   | -   | 1   | -   | -   | -   | 3    | 2    |
| CO4               | -   | -   | -   | -   | -   | 2   | -   | 3   | 3   | 3    | 2    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                      | Hours | Mapped CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>UNIT I: Entrepreneurship</b><br>Entrepreneur: Meaning of entrepreneurship – Types of Entrepreneurships – Traits of entrepreneurship – Factors promoting entrepreneurship- Barriers to entrepreneurship- the entrepreneurial culture- Stages in entrepreneurial process – Women entrepreneurship and economic development- SHG.                                                     | 7     | CO1       |
| <b>UNIT II: Developing Successful Business Ideas</b><br>Recognizing opportunities – trend analysis -- generating ideas – Brainstorming, Focus Groups, Surveys, Customer advisory boards, Day in the life research – Encouraging focal point for ideas and creativity at a firm level- Protecting ideas from being lost or stolen – Patents & IPR                                      | 7     | CO2       |
| <b>UNIT III: Opportunity Identification and Evaluation</b><br>Opportunity identification and product/service selection – Generation and screening the project ideas – Market analysis, Technical analysis, Cost benefit analysis and network analysis- Project formulation – Assessment of project feasibility- Dealing with basic and initial problems of setting up of Enterprises. | 8     | CO3       |

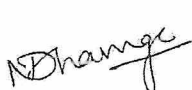
|                                                                                                                                                                                                                                                                                                                                                                     |   |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| <b>UNIT IV: Business Planning Process &amp; Funding</b><br>Meaning of business plan- Business plan process- Advantages of business planning- preparing a model project report for starting a new venture (Team-based project work). Sources of Finance- Venture capital- Venture capital process- Business angles- Commercial banks- Government Grants and Schemes. | 8 | CO4 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|

**TEXT BOOKS:**

1. Reddy, Entrepreneurship: Text & Cases - Cengage, New Delhi.
2. Kuratko/ Rao, Entrepreneurship: a south Asian perspective.- Cengage, New Delhi.
3. Leach/Melicher, Entrepreneurial Finance – Cengage. , New Delhi.
4. K. Sundar – Entrepreneurship Development – Vijay Nicole Imprints private limited
5. Khanka S.S., Entrepreneurial Development, S. Chand & Co. Ltd., New Delhi, 2001.
6. Sangeeta Sharma, Entrepreneurship Development, PHI Learning Pvt. Ltd., 2016.

**REFERENCE BOOKS:**

1. Barringer, B., Entrepreneurship: Successfully Launching New Ventures, 3rd Edition, Pearson, 2011.
2. Bessant, J., and Tidd, J., Innovation and Entrepreneurship, 2nd Edition, John Wiley & Sons, 2011.
3. Desai, V., Small Scale Industries and Entrepreneurship, Himalaya Publishing House, 2011.
4. Donald, F.K., Entrepreneurship- Theory, Process and Practice, 9th Edition, Cengage Learning, 2014.
5. Hirsch, R.D., Peters, M. and Shepherd, D., Entrepreneurship, 6th Edition, Tata McGraw-Hill Education Pvt. Ltd., 2006.

|                                                                                     |                                                                                     |                                                                                     |                    |         |                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of<br>release | Version |                                         |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Entrepreneurship/Economics/Management (EEM)**

|                                   |                                          |                                          |                   |                       |
|-----------------------------------|------------------------------------------|------------------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BEM01T-B/<br>4BEM02T-B | Name of Subject: Economics for Engineers |                   |                       |
|                                   |                                          |                                          |                   |                       |
| Total Hours Distribution per week |                                          |                                          |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                          | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                                          |                                          |                   |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination                 | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                                 | 50 Marks          | 2 Hours               |

| <b>Course Objectives</b> |                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------|
| 1                        | Acquire knowledge of economics to facilitate the process of economic decision making |
| 2                        | Acquire knowledge on basic financial management aspects                              |
| 3                        | Develop the skills to analyze financial statements                                   |

| <b>Course Outcomes</b>                                    |                                                                                                                            |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                            |
| CO1                                                       | Understand the concepts of economics and will also learn to use the principles of economics in the engineering discipline. |
| CO2                                                       | Develop the insight in understanding the consumer and production behavior and functioning of market economy.               |
| CO3                                                       | Understand about interest Rates, Evaluation Methods and Rate of Return Analysis                                            |
| CO4                                                       | Learn the implications of monetary and fiscal policies in Indian economy.                                                  |

| Course Competency |                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand core economic principles, analyze market demand/supply, and apply elasticity concepts in decision-making.     |
| 2                 | Analyze firm behavior under different market structures and optimize production and cost strategies.                     |
| 3                 | Apply time value of money principles and perform economic evaluation using present worth, annual worth, and IRR methods. |
| 4                 | Evaluate key macroeconomic issues in India and understand monetary and fiscal policy tools to address them.              |

### CO-PO Articulating Matrix

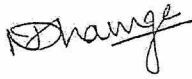
| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 3   | 2   | -   | -   | -   | 2   | -   | -   | -   | -    | 2    |
| CO2                                               | 2   | 2   | 2   | -   | -   | 3   | -   | -   | -   | -    | 2    |
| CO3                                               | 2   | -   | 3   | -   | -   | -   | -   | -   | -   | 2    | 2    |
| CO4                                               | 2   | 3   | -   | -   | -   | 3   | 2   | -   | -   | -    | 2    |



| Details of Topic                                                                                                                                                                                                                                           | Hours | Mappe<br>d<br>CO |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------|
| <b>Unit I:</b><br><b>Introduction and Demand Analysis</b><br>Principles of economics, how markets work: market forces of supply and demand, Elasticity and its application, Consumer equilibrium                                                           | 7Hr   | CO1              |
| <b>Unit II:</b><br><b>Theory of Production, Cost and Firms</b><br>Firms' production, cost and revenue behavior; resources optimization; Firms' behavior under- competitive markets, monopoly, monopolistic competition and oligopoly.                      | 8Hr.  | CO2              |
| <b>Unit III:</b><br><b>Engineering Economy</b><br>Time value of money: Single-Payment and Uniform Series, Nominal and Effective Interest Rates, Evaluation Methods: Present Worth Analysis, Annual Worth Analysis, Rate of Return Analysis                 | 7 Hr. | CO3              |
| <b>Unit IV:</b><br><b>Indian Economy</b><br>Nature and size of Indian Economy, Problems- Poverty, Unemployment, Inflation, measures for controlling these problems, Monetary policy- meaning, objectives, tools, fiscal policy-meaning, objectives, tools. | 8 Hr. | CO4              |

#### Suggested Text Books

- N. Gregory Mankiw. Principles of Microeconomics,
- Krugman, Paul, and Robin Wells. Microeconomics, New York, NY
- WG Sulliman, EM Wicks and CP Koelling, Engineering Economy, Pearson
- Chan S Park, Fundamentals of Engineering Economics, Always Learning
- Anindya Sen, Microeconomics, OUP India
- Leland T. Blank & Anthony J. Tarquin, Engineering Economy, McGraw-Hill
- Hal R. Varian Intermediate Microeconomics, W. W. Norton and Company
- Ruder Dutt and Sundaram, Indian Economy, S. Chand

|                                                                                     |                                                                                     |                                                                                     |                    |         |                                          |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------|---------|------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY 2025-<br>26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of<br>release | Version |                                          |

**KDK College of Engineering, Nagpur**  
**B.Tech.**  
**Entrepreneurship/Economics/Management (EEM)**

|                                   |                                          |                                                |                   |                       |
|-----------------------------------|------------------------------------------|------------------------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BEM01T-C/<br>4BEM02T-C | Name of Subject:<br>Human Resources Management |                   |                       |
| Total Hours Distribution per week |                                          |                                                |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                                | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                                          |                                                |                   |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination                       | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                                       | 50 Marks          | 2 Hours               |

| <b>Course Objectives</b> |                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------|
| 1                        | To gain knowledge into the basics of Human Resource Management.                                               |
| 2                        | To expose the students to current human resource practices and exercises designed to enhance critical skills. |
| 3                        | To expose the students to various aspects of human resource training & development                            |
| 4                        | To impart knowledge on performance appraisal of employees                                                     |

| <b>Course Outcomes</b>                                           |                                                                                                                                            |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>After completion of syllabus, the student will be able to</b> |                                                                                                                                            |
| CO1                                                              | relate the significance of human resource management and examine the role of human resource development in the success of an organization. |
| CO2                                                              | understand the need for planning and process of acquisition of human resources for a firm                                                  |
| CO3                                                              | design a training program using a useful framework for evaluating training needs.                                                          |
| CO4                                                              | understand importance of performance appraisal and also understand different methods of doing it.                                          |



| Course Competancy |                                                                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand the fundamental concepts, functions, and the dynamic environment of Human Resource Management, particularly in the Indian context. |
| 2                 | Develop the ability to plan human resources through job analysis, job design, and HR planning systems and strategies.                         |
| 3                 | Gain insights into recruitment, selection, and employee development practices, including modern training techniques and evaluation methods.   |
| 4                 | Analyze and apply various performance appraisal methods including individual, group, and modern techniques like MBO and 360-degree feedback.  |

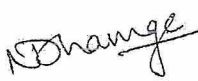
#### CO-PO Articulating Ma

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 1   | -   | -   | -   | -   | 2   | 3   | -   | -   | 2    | 2    |
| CO2                                               | 1   | -   | -   | -   | 2   | 2   | 3   | 2   | -   | 3    | 2    |
| CO3                                               | -   | 1   | -   | -   | 2   | -   | -   | 2   | -   | 2    | 2    |
| CO4                                               | -   | -   | 1   | -   | 2   | 2   | -   | 2   | 2   | 2    | 2    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Hours | Mapped CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>UNIT – I: INTRODUCTION</b><br>Human Resource Management: Meaning – definition – objectives – functions.<br>IIRM in a dynamic environment: Internal & External Environment.<br>IIRM in India: Introduction - Human Relation Movement - Scope of HR in India - Recent Trends in HR in India - Call Centers and BPOs.                                                                                                                                                                                                                                                                        | 7     | CO1       |
| <b>Unit – II HUMAN RESOURCE PLANNING</b><br>Introduction - Need for HR Planning - Process of HR Planning - HR Planning System – Responsibility of HR Planner - Job analysis – Job description – Job evaluation- Job specification – Job design- (Case analysis)                                                                                                                                                                                                                                                                                                                              | 7     | CO2       |
| <b>Unit – III PROCUREMENT OF HUMAN RESOURCES, TRAINING AND DEVELOPMENT</b><br>Introduction - Concept of Recruitment - Factors affecting Recruitment - Sources of Recruitment - Traditional and Modern Methods - Recruitment and Selection Policies - Recruitment Practices - Concept of Selection - Selection Techniques ( Case Analysis)<br><b>Training and Development:</b> Introduction - Meaning of Training - Importance of Training - Training Needs –Types and Techniques of Training Need and Importance of Management Development -Evaluation of training programme (Case analysis) | 9     | CO3       |
| <b>Unit – IV EMPLOYEE PERFORMANCE APPRAISAL</b><br>Meaning- Need of employee review - Concept of employee appraisal - Types of Appraisal methods - Individual Evaluation Methods - Multiple Person Evaluation Methods - MBO- 360 Degree Appraisal. CBCS – 2020                                                                                                                                                                                                                                                                                                                               | 7     | CO4       |

**Suggested Text Books:-**

1. Gary Dessler- Human Resource Management- Pearson Publishers
2. Alan Price- Fundamentals of Human Resource Management – Cengage Learning Emca
3. P. Subba Rao- Essentials of Human Resource Management and industrial relations- Text and cases - Himalaya Publishing House.
4. C.B. Mamoria- Personnel Management- Himalaya publications.
5. Shashi K. Gupta- Rosy Joshy- Human Resource Management- kalyani publishers.
6. Seema Sanghil-Human Resource Management- Vikas Publications CBCS – 2020

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Entrepreneurship/Economics/Management (EEM)**

|                                   |                                          |                                       |                  |                       |
|-----------------------------------|------------------------------------------|---------------------------------------|------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BEM01T-D/<br>4BEM02T-D | Name of Subject: Financial Management |                  |                       |
| Total Hours Distribution per week |                                          |                                       |                  |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       | Tutorial (T) : --                     | Practical (P): - |                       |
| Examination Scheme                |                                          |                                       |                  |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination              | Total Marks      | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                              | 50 Marks         | 2 Hours               |

| Course Objectives |                                                                                          |
|-------------------|------------------------------------------------------------------------------------------|
| 1                 | To introduce engineering students to the fundamental principles of financial management. |
| 2                 | To help students understand financial statements, cost analysis, and budgeting.          |
| 3                 | To develop the ability to analyze financial data for decision-making.                    |
| 4                 | To equip students with skills to evaluate investment and financing decisions.            |

| Course Outcomes                                      |                                                                                          |
|------------------------------------------------------|------------------------------------------------------------------------------------------|
| After completion of syllabus, the student is able to |                                                                                          |
| CO1                                                  | Explain the concepts and functions of financial management in business contexts.         |
| CO2                                                  | Interpret and analyze financial statements to assess financial health.                   |
| CO3                                                  | Apply techniques for capital budgeting, cost of capital, and working capital management. |
| CO4                                                  | Evaluate various financing options and their implications for business decisions.        |

| Course Competency |                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand the fundamental concepts of financial management, time value of money, and analyze financial statements using ratio analysis. |
| 2                 | Evaluate investment decisions using capital budgeting techniques like NPV, IRR, and understand risk in project selection.                |
| 3                 | Manage day-to-day business finances by understanding working capital components and financing strategies.                                |
| 4                 | Identify various sources of finance, compute cost of capital, and apply capital structure and dividend policy theories.                  |

| CO/PO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO1   | 2   | -   | -   | -   | -   | 2   | -   | -   | -   | 2    | 1    |
| CO2   | -   | 2   | -   | -   | 1   | 2   | -   | -   | -   | 2    | 2    |
| CO3   | 1   | -   | -   | -   | -   | -   | -   | -   | -   | 2    | 2    |
| CO4   | -   | -   | 2   | -   | -   | 2   | -   | -   | -   | 3    | 2    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                   | Hours | Mapped CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit 1: Introduction to Financial Management and Analysis</b> <ul style="list-style-type: none"> <li>Nature, Scope, and Objectives of Financial Management</li> <li>Role of a Financial Manager in an Engineering Firm</li> <li>Time Value of Money: Concepts and Calculations</li> <li>Financial Statements: Balance Sheet, Income Statement, Cash Flow Statement</li> <li>Financial Ratio Analysis</li> </ul> | 7     | CO1       |
| <b>Unit 2: Capital Budgeting and Investment Decisions</b> <ul style="list-style-type: none"> <li>Importance of Capital Budgeting</li> <li>Techniques: Payback Period, Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index</li> <li>Risk Analysis in Capital Budgeting</li> <li>Capital Rationing and Ranking of Investment Proposals</li> </ul>                                            | 7     | CO2       |
| <b>Unit 3: Working Capital Management</b><br>Concepts of Working Capital and Operating Cycle <ul style="list-style-type: none"> <li>Determinants of Working Capital Requirements</li> <li>Cash, Inventory, and Receivables Management</li> <li>Working Capital Financing</li> </ul>                                                                                                                                | 8     | CO3       |
| <b>Unit 4: Sources of Finance and Cost of Capital</b> <ul style="list-style-type: none"> <li>Equity and Debt Financing</li> <li>Lease and Hire Purchase Financing</li> <li>Cost of Capital: Cost of Debt, Equity, and Weighted Average Cost of Capital (WACC)</li> <li>Capital Structure Theories and Leverage Analysis</li> <li>Dividend Decisions and Policies</li> </ul>                                        | 8     | CO4       |

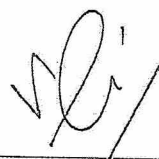


**Textbook:**

- I.M. Pandey, *Financial Management*, Vikas Publishing House, Latest Edition

**Reference Books:**

1. Prasanna Chandra, *Financial Management: Theory and Practice*, McGraw Hill
2. M.Y. Khan and P.K. Jain, *Financial Management: Text, Problems and Cases*, McGraw Hill
3. Eugene F. Brigham & Joel F. Houston, *Fundamentals of Financial Management*, Cengage Learning
4. James C. Van Horne & John M. Wachowicz, *Fundamentals of Financial Management*, Pearson Education

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|--------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY<br>2025-26<br>onwards |
| BoS<br>Chairman                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                            |

**KDK College of Engineering, Nagpur**  
**B. Tech.**  
 (Ability Enhancement Course AEC-2)

|                                   |                                          |                                       |                   |                       |
|-----------------------------------|------------------------------------------|---------------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BEM01T-E/<br>4BEM02T-E | Name of Subject: Strategic Management |                   |                       |
| Total Hours Distribution per week |                                          |                                       |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       | Tutorial (T) : --                     | Practical (P): -- |                       |
| Examination Scheme                |                                          |                                       |                   |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination              | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                              | 50 Marks          | 2 Hours               |

| Course Objectives                                         |                                                                                                                            |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1                                                         | To enable the learners to understand new forms of Strategic Management concepts and their use in business                  |
| 2                                                         | To provide information pertaining to Business, Corporate and Global Reforms                                                |
| 3                                                         | To develop learning and analytical skills of the learners to enable them to solve cases and to provide strategic solutions |
| 4                                                         | To acquaint the learners with recent developments and trends in the business corporate world                               |
|                                                           |                                                                                                                            |
| Course Outcomes                                           |                                                                                                                            |
| After completion of syllabus, the student will be able to |                                                                                                                            |
| CO1                                                       | Understand the basic concepts of entrepreneurship and business opportunities                                               |
| CO2                                                       | Understands the ideas to develop & convert the successful business ideas                                                   |
| CO3                                                       | Understand & solve problems related to market, technical aspects & assessment of project feasibility                       |
| CO4                                                       | Prepare project reports for starting a new venture on team based & raising the funds for starting the business.            |



| Course Competency |                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand the foundational concepts of strategic management, its processes, levels, functional strategies, and environmental scanning.              |
| 2                 | Analyze, formulate, and evaluate corporate strategies using strategic tools like SWOT, BCG, and GE Matrix, and understand implementation challenges. |
| 3                 | Understand corporate restructuring, renewal strategies, strategic alliances, and the role of IT and PPP in business growth.                          |
| 4                 | Evaluate outsourcing models, disaster management strategies, and start-up policies like "Make in India" for entrepreneurial development.             |

### CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 1   | -   | -   | -   | -   | 3   | 2   | -   | -   | 2    | 3    |
| CO2                                               | -   | 2   | -   | -   | -   | 2   | -   | 2   | -   | 2    | 2    |
| CO3                                               | 1   | -   | 1   | -   | -   | 1   | -   | -   | -   | 3    | 2    |
| CO4                                               | -   | -   | -   | 2   | -   | 2   | -   | 3   | 3   | 3    | 2    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Hours | Mapped CO |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit-I: Introduction to Strategic Management</b><br>Concept of Strategic Management, Strategic Management Process, Vision, Mission and Goals, Benefits and Risks of Strategic Management. Levels of Strategies: Corporate, Business and Operational Level Strategy, Functional Strategies: Human Resource Strategy, Marketing Strategy, Financial Strategy, Operational Strategy, Business Environment: Components of Environment, Micro and Macro and Environmental Scanning.                                                                                                  | 7     | CO1       |
| <b>Unit-II: Strategy Formulation, Implementation and Evaluation</b><br>Strategic Formulation: Stages and Importance, Formulation of Alternative Strategies: Mergers, Acquisitions, Takeovers, Joint Ventures, Diversification, Turnaround, Divestment and Liquidation. Strategic Analysis and Choice: Issues and Structures, Corporate Portfolio Analysis- SWOT Analysis, BCG Matrix, GE Nine Cell Matrix, Hofer's Matrix, ETOP- Environmental Threat and Opportunity Profile, Strategic Choice- Factors and Importance. Strategic Implementation: Steps, Importance and Problems, | 9     | CO2       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| Resource Allocation- Importance & Challenges , Strategic Evaluation and Control: Importance, Limitations and Techniques ,Budgetary Control: Advantages, Limitations.                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |     |
| <b>Unit-III: Business, Corporate and Global Strategies</b><br>Corporate Restructuring Strategies: Concept, Need and Forms, Corporate Renewal Strategies: Concept, Internal and External factors and Causes. Strategic Alliance: Concept, Types, Importance, Problems of Indian Strategic Alliances and International Businesses ,Public Private Participation: Importance, Problems and Governing Strategies of PPP Model. Information Technology Driven Strategies: Importance, Limitations and contribution of IT sector in Indian Business.                                                                 | 6 | CO3 |
| <b>Unit-IV: Business Process Outsourcing and Knowledge</b><br>Process Outsourcing in India: Concept and Strategies. Reasons for growing BPO and KPO businesses in India. Reengineering Business Processes- Business Reengineering, Process Re-engineering and Operational Re-engineering, Disaster Management: Concept, Problems and Consequences of Disasters, Strategies for Managing and Preventing disasters and Cope up Strategies. Start-up Business Strategies and Make in India Model: Process of business start-ups and its Challenges, Growth Prospects and government initiatives in Make in India. | 8 | CO4 |

**Text Books:**

- Strategic Management, A Dynamic Perspective -Concepts and Cases – Mason A. Carpenter, Wm. Gerard Sanders, Prashant Salwan, Published by Dorling Kindersley (India) Pvt Ltd, Licensees of Pearson Education in south Asia
- Strategic Management and Competitive Advantage-Concepts Jay B. Barney, William S. Hesterly, Published by PHI Learning Private Limited, New Delhi
- Globalization, Liberalization and Strategic Management - V. P. Michael

**Reference Books:**

- Business Organisation – Rajendra P. Maheshwari, J.P. Mahajan, Published by International Book House Pvt Ltd
- Disasters and Development- Cuny Fred C, Published by Oxford University Press, Oxford

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Value Education Course (VEC)**

|                                   |                                         |                                        |                   |                       |
|-----------------------------------|-----------------------------------------|----------------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BVE01T-A<br>4BVE02T-A | Name of Subject: Environmental Studies |                   |                       |
| Total Hours Distribution per week |                                         |                                        |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                      |                                        | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                                         |                                        |                   |                       |
| Mid Semester Examination          | Continuous Assessment                   | End Semester Examination               | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                | 25 Marks                               | 50 Marks          | 2 Hours               |

| <b>Course Objectives</b> |                                                                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | A systematic study of human interaction with the environment in the interests of solving complex problems.                                        |
| 2                        | Study of physical and biological characters of the environment, also the social and cultural factors along with the impact of man on environment. |
| 3                        | Bring together the principles of various disciplines of Sciences, to solve contemporary environmental problems.                                   |

| <b>Course Outcomes</b>                               |                                                                                                                                                                                                           |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student is able to |                                                                                                                                                                                                           |
| CO1                                                  | Understand the Multidisciplinary nature of environmental science and gain in-depth knowledge of natural processes that sustain life and govern economy.                                                   |
| CO2                                                  | Develop critical thinking for shaping strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and sustainable development.       |
| CO3                                                  | Acquire values and attitudes towards understanding complex environmental-economic social challenges, and participating actively in solving current environmental problems and preventing the future ones. |
| CO4                                                  | Adopt sustainability as a practice in life, society and industry and know their roles and ethics, as citizens, and consumers in a complex, interconnected world.                                          |

| Course Competency |                                                                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Applying the interdependence of environmental disciplines and importance of sustainable development.                                       |
| 2                 | Comprehend ecosystem dynamics, energy flow, and biodiversity types, values, threats, and conservation practices.                           |
| 3                 | Analyze various types of pollution, hazards, and disasters. Apply EIA and auditing methods for sustainable environmental planning.         |
| 4                 | Evaluate the social dimensions of environmental problems and global agreements. Understand policy frameworks and ethics in sustainability. |

#### CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 2   | -   | 1   | -   | -   | 3   |     | -   | -   | -    | 2    |
| CO2                                               | -   | 1   | 1   | -   | -   | 3   |     | -   | -   | -    | 2    |
| CO3                                               | 1   | -   | 2   | 2   | 2   | 3   | 1   | -   | -   | -    | 2    |
| CO4                                               | 1   | -   | 2   | -   | -   | 3   | 3   | -   | 2   | 1    | 2    |



# SYLLABUS

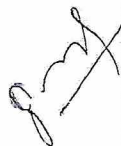
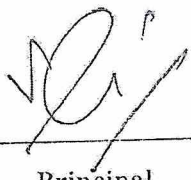
| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Hours | Mapped CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit – I</b><br><b>Environment as a multidisciplinary subject and Natural resources</b><br>Environment: Definition, Scope, basic terms, importance, need for public awareness, concept of sustainable development. Natural resources and associated problems. Forest, water, mineral, food and land resources. Role of individuals in conservation of natural resources. Equitable use of resources for sustainable lifestyle. Environmental Application of remote sensing and GIS                                                                                                                         | 6     | CO1       |
| <b>Unit – II Ecosystem and Biodiversity</b><br>Ecosystem: Concept, Structure and Functions, Energy Flow, Food Chain, Food web, and Ecological Pyramids; Grassland and pond Ecosystem. Ecological succession. Biodiversity: Introduction, definition, Types (genetic, species & ecosystem). value of biodiversity, Biodiversity at Global, National and local Levels. Hot spots of biodiversity; Threats to biodiversity; conservation, In-situ and Ex-situ conservation; Relevant case studies, laws and Legislations.                                                                                        | 8     | CO2       |
| <b>UNIT-III:</b><br><b>Environmental Pollution, hazards, Disaster management &amp; EIA:</b><br>Pollution: Definition, causes, effects and control measures of Water, Air, solid, noise and nuclear pollution. Environmental hazards & Disaster management: Definition, and types of mitigation. Preparedness and awareness. Environmental impact assessment (EIA); scope, importance and need. Role of IT in environment. Environmental Auditing; Relevant case studies, laws and Legislations.                                                                                                               | 8     | CO3       |
| <b>Unit – IV</b><br><b>Social Issues and Environment, Environmental conventions</b><br>Population explosion, Urban problems related to energy, resettlement and rehabilitation of people, their problems and concerns, family welfare programme, human health, women and child welfare; environmental ethics & consumerism. Mass tourism and environment. Sustainable tourism. Stockholm convention, Kyoto Protocol, Montreal Protocol, COP Conference of Parties), Ramsar Convention, Rio Summit, Convention on Biological Diversity; National Green Tribunal; Relevant case studies, laws and Legislations. | 8     | CO4       |

**Textbooks:**

- 1.Environmenta Studies: ISBN: 8188458-77-5
- 2.Environmenta StudiesISBN-978-81-317-2118-6

**Reference books:**

- 1.Environmenta Studies Univ. Sci. PressISBN-978-81-318-0641-8
- 2.Environmenta Studie: ISBN: 8188458-77-5

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                      |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|--------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable for AY<br>2025-26 onwards |
| BoS<br>Chairman                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                      |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Value Education Course (VEC)**

|                                   |                                          |                                         |                  |                          |
|-----------------------------------|------------------------------------------|-----------------------------------------|------------------|--------------------------|
| Semester<br>III/IV                | Subject Code:<br>3BVE01T-B/<br>4BVE02T-B | Name of Subject:<br>Indian Constitution |                  |                          |
| Total Hours Distribution per week |                                          |                                         |                  |                          |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                         | Tutorial (T) : 2 | Practical (P): --        |
| Examination Scheme                |                                          |                                         |                  |                          |
| Mid Semester<br>Examination       | Continuous<br>Assessment                 | End Semester<br>Examination             | Total Marks      | Examination<br>Duration: |
| 15 Marks                          | 10 Marks                                 | 25Marks                                 | 50 Marks         | 2Hrs                     |

| Course Objectives |                                                                               |
|-------------------|-------------------------------------------------------------------------------|
| 1                 | To impart a comprehensive outlook about the nature of the Indian Constitution |
| 2                 | To identify the importance of Fundamental Rights and Fundamental Duties       |
| 3                 | To understand the Functioning of Union and State in Indian Federal System.    |

| Course Outcomes                                            |                                                                                                            |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the students will be able to |                                                                                                            |
| CO1                                                        | Interpret the Basic Concepts of Indian Constitution                                                        |
| CO2                                                        | Evaluate the Fundamental Rights and Fundamental Duties in proper sense                                     |
| CO3                                                        | Analyze the Indian political system, the powers and functions of the Union and State Governments in detail |
| CO4                                                        | Learn about the Institutions of Indian Politics and to acquire a sense of Democratic System                |

| Course Competency |                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------|
| 1                 | Explain the meaning and significance of the Constitution and its role in democratic governance       |
| 2                 | Identify the historical sources and development of the Indian Constitution.                          |
| 3                 | Interpret the key features of the Constitution including citizenship, the Preamble, and core values. |
| 4                 | Distinguish between Fundamental Rights, Fundamental Duties, and Directive Principles of State Policy |

# CO-PO Articulating Matrix

| Programme Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO              | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                | 1   | -   | -   | -   | -   | 3   | 3   | -   | -   | -    | 2    |
| CO2                | -   | 2   | -   | -   | -   | 3   | 3   | -   | 2   | 2    | 2    |
| CO3                | -   | -   | 2   | -   | -   | 3   | 2   | -   | -   | 1    | 2    |
| CO4                | 1   | -   | -   | -   | -   | 3   | 3   | 2   | 2   | 2    | 2    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                               | Hours | Mapped with CO |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| Unit 1: Introduction                                                                                                                                                                                                                                                                                                                                                                                                                           | 6     | CO1            |
| Constitution' meaning of the term,, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy                                                                                                                                                                                                                                              |       |                |
| Unit 2: Union Government and its Administration                                                                                                                                                                                                                                                                                                                                                                                                | 6     | CO2            |
| Structure of the Indian Union: Federalism, Centre- State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha                                                                                                                                                                                                                                               |       |                |
| Unit 3: State Government and its Administration                                                                                                                                                                                                                                                                                                                                                                                                | 6     | CO3            |
| Governor: Role and Position, CM and Council of ministers, State Secretariat: Organization, Structure and Functions                                                                                                                                                                                                                                                                                                                             |       |                |
| Unit4: Local Administration                                                                                                                                                                                                                                                                                                                                                                                                                    | 6     | CO4            |
| District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayati Raj: Introduction, PRI: Zila Pachayat, Elected officials and their roles, CEO Zila Pachayat: Position and role, Block level: Organizational Hierarchy (Different departments), Village level: Role of Elected and Appointed officials, Importance of grass root democracy |       |                |

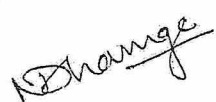
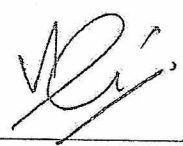


**Text Books**

1. 'Indian Constitution' by D.D. Basu
2. 'Indian Administration' by Avasti and Avasti

**References Books**

1. 'Indian Polity' by Laxmikanth
2. 'Indian Administration' by Subhash Kashyap
3. Chakrabarty, Bidyut, Indian Government and Politics, New Delhi: Sage Publishing, 2008.
4. M. V. Pylee, India's Constitution, New Delhi; S. Chand Pub., 2017 (16th edn.)  
J.N. Pandey, The Constitutional Law of India, Allahabad; Central Law Agency, 2018  
(55th edition)

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                            |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|--------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY<br>2025-26<br>onwards |
| BoS<br>Chairman                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                            |

# KDK College of Engineering, Nagpur

B. Tech.

## Value Education Course (VEC)

|                                   |                                          |                                  |                   |                       |
|-----------------------------------|------------------------------------------|----------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BVE01T-C/<br>4BVE02T-C | Name of Subject: Civic Education |                   |                       |
| Total Hours Distribution per week |                                          |                                  |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                  | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                                          |                                  |                   |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination         | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                         | 50 Marks          | 2 Hours               |

| Course Objectives |                                                                                                                                        |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | To explore how engineering practices influence societal development and responsibilities engineers hold towards the public.            |
| 2                 | To comprehend ethical principles and frameworks guiding engineers in making morally sound decisions.                                   |
| 3                 | To identify the standards of professional behavior expected from engineers, including accountability and continuous development.       |
| 4                 | To understand the legal obligations and rights of engineers, encompassing laws, regulations, and intellectual property considerations. |

| Course Outcomes |                                                                                                                                                       |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO1             | Explain how engineering solutions affect communities and the environment, emphasizing sustainable and socially responsible practices                  |
| CO2             | Utilize established ethical theories and codes to analyze and resolve moral dilemmas encountered in engineering scenarios.                            |
| CO3             | Exhibit understanding of professional standards, manage conflicts of interest, and commit to lifelong learning within the engineering profession.     |
| CO4             | Identify and apply relevant laws and regulations affecting engineering practice, including contract law, liability, and intellectual property rights. |



| Course Competency |                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------|
| 1                 | Apply ethical theories, professional codes, and decision-making frameworks to real-world engineering dilemmas       |
| 2                 | Demonstrate professional conduct, manage conflicts of interest, and commit to lifelong learning in engineering.     |
| 3                 | Interpret and apply legal principles such as licensing, contracts, torts, and intellectual property in engineering. |

### CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | -   | 2   | 2   | -   | -   | 3   | -   | -   | -   | -    | -    |
| CO2                                               | -   | -   | -   | -   | -   | -   | 2   | 2   | -   | -    | -    |
| CO3                                               | -   | -   | -   | -   | -   | -   | 3   | -   | -   | 2    | 3    |
| CO4                                               | -   | -   | -   | -   | -   | 2   | 2   | -   | -   | 2    | -    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Hours | Mapped CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>UNIT – I: Engineers and Society:</b><br>Articulate the multifaceted role of engineers within society, evaluate the societal implications of engineering project, and demonstrate an understanding of sustainable practices in engineering.                                                                                                                                                                                                                                                    | 7     | CO1       |
| <b>Unit – II Engineering Ethics and Moral Responsibility:</b><br>Foundations of Engineering Ethics: Introduction to ethical theories and principles relevant to engineering, Codes of Ethics: Study of professional codes such as those from the NSPE and ASCE, Ethical Decision-Making: Frameworks for resolving ethical dilemmas in engineering contexts, Whistle blowing and Professional Integrity: Understanding the importance of honesty and reporting unethical practices.               | 7     | CO2       |
| <b>Unit – III Professional Responsibility and Conduct:</b><br>Professionalism in Engineering: Defining the standards and expectations of professional conduct, Accountability and Responsibility: Understanding the engineer's obligation to clients, employers, and the public, Conflict of Interest: Identifying and managing situations where personal interests may conflict with professional duties, Lifelong Learning: Emphasizing the importance of continuous professional development. | 8     | CO3       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|
| Unit – IV Legal Aspects in Engineering Practice:<br>Engineering Laws and Regulations: Overview of laws governing engineering practice, including licensing requirements. Contract Law: Understanding contractual obligations and liabilities in engineering projects. Tort Law and Negligence: Exploring legal consequences of engineering failures and negligence. Intellectual Property Rights: Protecting innovations and respecting intellectual property of others. | 8 | CO4 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|

#### SUGGESTED TEXT BOOKS:

- 1) Ethics in Engineering by Mike W. Martin and Roland Schinzinger Panimalar Institute of Technology.
- 2) Engineering Ethics by Charles B. Fleddermann Panimalar Institute of Technology.

#### REFERENCE BOOKS:

- 1) Professional Responsibility: The Role of the Engineer in Society.
- 2) Engineering in Society" by the Royal Academy of Engineering Royal Academy of Engineering.

|                                                                                    |                                                                                    |                                                                                    |                    |         |                                         |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| BoS Chairman                                                                       | Dean (Acad.)                                                                       | Principal                                                                          | Date of<br>release | Version |                                         |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
**Value Education Course (VEC)**

|                                   |                                          |                                   |                   |                       |
|-----------------------------------|------------------------------------------|-----------------------------------|-------------------|-----------------------|
| Semester<br>III/IV                | Subject Code:<br>3BVE01T-D/<br>4BVE02T-D | Name of Subject: Gender Education |                   |                       |
| Total Hours Distribution per week |                                          |                                   |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs                       |                                   | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                                          |                                   |                   |                       |
| Mid Semester Examination          | Continuous Assessment                    | End Semester Examination          | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                                 | 25 Marks                          | 50 Marks          | 2 Hours               |

| <b>Course Objectives</b> |                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------|
| 1                        | Understand fundamental concepts related to gender and their relevance in engineering contexts.   |
| 2                        | Analyse the social construction of gender and its impact on professional environments.           |
| 3                        | Evaluate gender disparities in various sectors, including education, employment, and technology. |
| 4                        | Develop strategies to promote gender equity and inclusivity within engineering practices         |

| <b>Course Outcomes</b>                               |                                                                                                                       |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student is able to |                                                                                                                       |
| CO1                                                  | Differentiate between sex and gender, and explain related concepts such as patriarchy, gender roles, and stereotypes. |
| CO2                                                  | Assess the influence of social institutions on gender socialization and discrimination.                               |
| CO3                                                  | Critically examine gender issues within the Indian societal and educational context.                                  |
| CO4                                                  | Propose and implement inclusive practices to address gender disparities in engineering fields.                        |

### SUGGESTED TEXTBOOKS:-

- 1) Gender and Development by Janet Momsen.
- 2) Gender: The Basics By Hilary M Lips

### REFERENCE BOOKS:-

- 1) Ethics in Engineering by Mike W Martin & Roland Schinzinger
- 2) Human Values and Professional Ethics by R.R. Gour, R Sangal & G.P.Bagaria

|   |  |  |      |  |  |
|---|--|--|------|--|--|
| 9 |  |  | June |  |  |
|---|--|--|------|--|--|

| Course Competency |                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Apply the concept, purpose, and methods of value education for personal growth and societal well-being.                            |
| 2                 | Develop self-awareness and recognize the need for harmony between the Self and the Body.                                           |
| 3                 | Analyze the foundations of ethical human conduct and identify ways to address social disparities.                                  |
| 4                 | Apply ethical principles and right understanding to resolve issues in professional life and contribute to sustainable development. |

### CO-PO Articulating Matrix

| Programme Outcome |     |     |     |     |     |     |     |     |     |      |      |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1               | -   | -   | -   | -   | -   | 2   | 3   | 2   | -   | -    | 2    |
| CO2               | -   | -   | -   | -   | -   | 2   | 2   | -   | -   | -    | 2    |
| CO3               | -   | -   | -   | -   | -   | 3   | 2   | 2   | 2   |      | 2    |
| CO4               | -   | -   | -   | -   | -   | 3   | 3   | 2   | 2   | 2    | 3    |



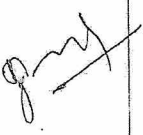
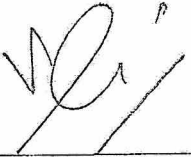
| Details of Topic                                                                                                                                                                                                                                                                                                                                               | Hours | Mapped CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit – I</b><br><b>Introduction to Value Education</b><br>1. Value Education- Definition, Concept and Need.<br>2. The Content and Process of Value Education.<br>3. Basic Guidelines for Value Education.<br>4. Self-exploration as a means of Value Education.<br>5. Happiness and Prosperity as parts of Value Education                                  | 7     | CO1       |
| <b>Unit – II: Harmony in the Human Being</b><br>1. Human Being is more than just the Body.<br>2. Harmony of the Self ('I') with the Body.<br>3. Understanding Myself as Co-existence of the Self and the Body.<br>4. Understanding Needs of the Self and the needs of the Body.<br>5. Understanding the activities in the Self and the activities in the Body. | 7     | CO2       |
| <b>UNIT-III:</b><br><b>Social Ethics</b><br>1. The Basics for Ethical Human Conduct.<br>2. Defects in Ethical Human Conduct.<br>3. Holistic Alternative and Universal Order.<br>4. Universal Human Order and Ethical Conduct.<br>5. Human Rights violation and Social Disparities.                                                                             | 8     | CO3       |
| <b>Unit – IV</b><br><b>Professional Ethics</b><br>1. Value based Life and Profession.<br>2. Professional Ethics and Right Understanding.<br>3. Competence in Professional Ethics.<br>4. Issues in Professional Ethics – The Current Scenario.<br>5. Vision for Holistic Technologies, Production System and Management Models.                                 | 8     | CO4       |

### TEXT BOOKS

1. A.N Tripathy, New Age International Publishers, 2003.
2. Bajpai. B. L ,New Royal Book Co, Lucknow, Reprinted, 2004
3. Bertrand Russell Human Society in Ethics & Politics

### REFERENCE BOOKS

1. Gaur. R.R. , Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
2. Gaur. R.R. , Sangal. R , Bagaria. G.P, Teachers Manual Excel Books, 2009.
3. I.C. Sharma . Ethical Philosophy of India Nagin & co Julundhar
4. Mortimer. J. Adler, – Whatman has made of man
5. William Lilly Introduction to Ethic Allied Publisher

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY 2025-<br>26 onwards |
| BoS<br>Chairman                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                          |



**KDK College of Engineering, Nagpur**  
**B. Tech.**

**Value Education Course (VEC)**

|                                   |                                         |                                         |                   |                          |
|-----------------------------------|-----------------------------------------|-----------------------------------------|-------------------|--------------------------|
| Semester<br>III/IV                | Subject Code:<br>3BVE01T-E<br>4BVE02T-E | Name of Subject: Universal Human Values |                   |                          |
| Total Hours Distribution per week |                                         |                                         |                   |                          |
| Total Credit: 2                   | Lecture (L): 2 Hrs                      |                                         | Tutorial (T) : -- | Practical (P): --        |
| Examination Scheme                |                                         |                                         |                   |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment                | End Sem<br>Examination                  | Total Marks       | Examination<br>Duration: |
| 15 Marks                          | 10 Marks                                | 25 Marks                                | 50 Marks          | 2 Hours                  |

| <b>Course Objectives</b> |                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | To help students distinguish between values and skills, and understand the need, basic Guidelines, content and process of value education. |
| 2                        | To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession.        |
| 3                        | To help students understand the meaning of happiness and prosperity for a human being.                                                     |
| 4                        | To facilitate the students to understand harmony at all the levels of human living, and live accordingly.                                  |
| 5                        | To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life.             |

| <b>Course Outcomes</b>                                           |                                                                                                                                                                  |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>After completion of syllabus, the student will be able to</b> |                                                                                                                                                                  |
| <b>COI</b>                                                       | Understand the significance of value inputs in a classroom and start applying them in their life and profession                                                  |
| <b>COII</b>                                                      | Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc. |
| <b>COIII</b>                                                     | Understand the role of a human being in ensuring harmony in society and nature.                                                                                  |
| <b>COIV</b>                                                      | Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.                |

| Course Competency |                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Apply the concept, purpose, and methods of value education for personal growth and societal well-being.                            |
| 2                 | Develop self-awareness and recognize the need for harmony between the Self and the Body.                                           |
| 3                 | Analyze the foundations of ethical human conduct and identify ways to address social disparities.                                  |
| 4                 | Apply ethical principles and right understanding to resolve issues in professional life and contribute to sustainable development. |

#### CO-PO Articulating Matrix

| Programme Outcome |     |     |     |     |     |     |     |     |     |      |      |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1               | -   | -   | -   | -   | -   | 2   | 3   | 2   | -   | -    | 2    |
| CO2               | -   | -   | -   | -   | -   | 2   | 2   | -   | -   | -    | 2    |
| CO3               | -   | -   | -   | -   | -   | 3   | 2   | 2   | 2   |      | 2    |
| CO4               | -   | -   | -   | -   | -   | 3   | 3   | 2   | 2   | 2    | 3    |



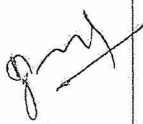
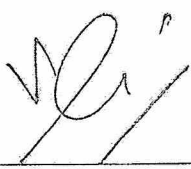
| Details of Topic                                                                                                                                                                                                                                                                                                                                               | Hours | Mapped CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit – I</b><br><b>Introduction to Value Education</b><br>1. Value Education- Definition, Concept and Need.<br>2. The Content and Process of Value Education.<br>3. Basic Guidelines for Value Education.<br>4. Self-exploration as a means of Value Education.<br>5. Happiness and Prosperity as parts of Value Education                                  | 7     | CO1       |
| <b>Unit – II: Harmony in the Human Being</b><br>1. Human Being is more than just the Body.<br>2. Harmony of the Self ('I') with the Body.<br>3. Understanding Myself as Co-existence of the Self and the Body.<br>4. Understanding Needs of the Self and the needs of the Body.<br>5. Understanding the activities in the Self and the activities in the Body. | 7     | CO2       |
| <b>UNIT-III:</b><br><b>Social Ethics</b><br>1. The Basics for Ethical Human Conduct.<br>2. Defects in Ethical Human Conduct.<br>3. Holistic Alternative and Universal Order.<br>4. Universal Human Order and Ethical Conduct.<br>5. Human Rights violation and Social Disparities.                                                                             | 8     | CO3       |
| <b>Unit – IV</b><br><b>Professional Ethics</b><br>1. Value based Life and Profession.<br>2. Professional Ethics and Right Understanding.<br>3. Competence in Professional Ethics.<br>4. Issues in Professional Ethics – The Current Scenario.<br>5. Vision for Holistic Technologies, Production System and Management Models.                                 | 8     | CO4       |

### TEXT BOOKS

1. A.N Tripathy, New Age International Publishers, 2003.
2. Bajpai. B. L .New Royal Book Co, Lucknow, Reprinted, 2004
3. Bertrand Russell Human Society in Ethics & Politics

### REFERENCE BOOKS

1. Gaur. R.R. , Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
2. Gaur. R.R. , Sangal. R , Bagaria. G.P, Teachers Manual Excel Books, 2009.
3. I.C. Sharma . Ethical Philosophy of India Nagin & co Julundhar
4. Mortimer. J. Adler, – Whatman has made of man
5. William Lilly Introduction to Ethic Allied Publisher

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY 2025-<br>26 onwards |
| BoS<br>Chairman                                                                   | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                          |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. IV<sup>th</sup> Semester Electrical Engineering**

|                                   |                          |                                           |                  |                          |
|-----------------------------------|--------------------------|-------------------------------------------|------------------|--------------------------|
| Semester<br>IV                    | Subject Code:<br>4BEE01T | Name of Subject:<br>Electromagnetic Field |                  |                          |
| Total Hours Distribution per week |                          |                                           |                  |                          |
| Total Credit: 4                   | Lecture (L): 4 Hrs.      |                                           | Tutorial (T) : - | Practical (P): -         |
| Examination Scheme                |                          |                                           |                  |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                    | Total Marks      | Examination<br>Duration: |
| 30 Marks                          | 20 Marks                 | 50 Marks                                  | 100 Marks        | 3 Hours                  |

|                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Course Objectives</b>                                                                                                                                                                                                               |
| Introduce the concepts of different coordinate systems, Maxwell's equations, static electric and magnetic fields and methods of solving for the quantities associated with these fields, time varying fields and displacement current. |

| Course Outcomes                                          |                                                                                                    |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| After completion of course, the students will be able to |                                                                                                    |
| 1                                                        | Recognize and apply the knowledge of different co-ordinate systems.                                |
| 2                                                        | Evaluate the physical quantities of electromagnetic fields in different media and apply Gauss law. |
| 3                                                        | Describe and evaluate potential field.                                                             |
| 4                                                        | Explain steady magnetic fields, their behavior in different media, associated laws and inductance. |
| 5                                                        | Discuss Maxwell's equations in different forms and various media.                                  |

**Course Competencies:**

- Acquire and apply concepts related to vector calculus, electric & magnetic fields, Maxwell's equations, wave propagation, wave behaviour, and practical applications.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO2 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO3 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO4 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO5 | 3                                            | 3   | 2   | 1   | 3   | 3   | 1   | 1   | 1   | -    | 3    | 2    | -    |

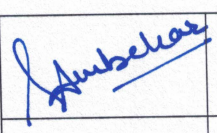
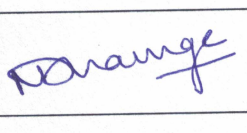
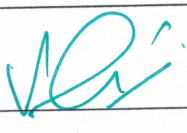


## SYLLABUS

| Details of Topic                                                                                                                                                                                                                                                | Hours | Mapped with CO |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit I: Review of Vector Analysis:</b>                                                                                                                                                                                                                       | 8     | CO1            |
| Review of Scalars and vectors, Vector Algebra, Rectangular Co-ordinate System, Cylindrical Co-ordinate System, Spherical Co-ordinate System and transformation of Cartesian to Cylindrical, Cartesian to Spherical and vice versa.                              |       |                |
| <b>Unit II: Coulomb's law, Electrical field intensity and electric flux density, Gauss's law, Divergence:</b>                                                                                                                                                   | 8     | CO2            |
| Coulombs Law, Electric field intensity, field due to continuous volume charge distribution, field of point charge, field of line charge, field of sheet charge, Electric Flux density, Gauss's law and divergence theorem.                                      |       |                |
| <b>Unit III: Potential of charge system , poison's and Laplace Equations:</b>                                                                                                                                                                                   | 6     | CO3            |
| Definition of potential difference and potential, the potential field of a point charge, the potential field of a system of charges, potential gradient. Poisons and Laplace Equation                                                                           |       |                |
| <b>Unit IV: The steady Magnetic Field and Magnetic forces:</b>                                                                                                                                                                                                  | 8     | CO4            |
| Biot Savart's law, Ampere's Circuital law, Stoke's theorem, magnetic flux density, scalar and vector magnetic potentials. Force on moving charge, force between differential current elements, Magnetization and permeability, Inductance and mutual inductance |       |                |
| <b>Unit V: Maxwell's equation and wave propagation:</b>                                                                                                                                                                                                         | 6     | CO5            |
| Point form of Maxwell's equation, Integral form of Maxwell's equations, Wave propagation, Poynting vector, skin effect.                                                                                                                                         |       |                |

|                                                                                                          |
|----------------------------------------------------------------------------------------------------------|
| <b>Text Books</b>                                                                                        |
| 1. W.H. Hayt , "Engineering Electromagnetics" ,TMH Publication 2006                                      |
| <b>References Books</b>                                                                                  |
| 1. N. N. Rao, Electromagnetic Engg. V Edition ,Prentice Hall. 2005                                       |
| 2. Fawwaz T.Ulaby, Applied Electromagnetics, Prentice Hall. 1999                                         |
| 3. Krauss, Electromagnetic Engg. IV Edition,Tata Mc Graw Hill. 2003                                      |
| 4. Shevgaonkar, Electromagnetic Waves,Tata Mc Graw Hill 2002                                             |
| 5. Matthew, N. O. Sadiku Elements of Electromagnetics, Oxford University publication, 6th edition, 2014. |

|                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------|
| <b>NPTEL Link:</b>                                                                                                           |
| 1. <a href="https://archive.nptel.ac.in/courses/108/104/108104087">https://archive.nptel.ac.in/courses/108/104/108104087</a> |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
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| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. IV<sup>th</sup> Semester Electrical Engineering**

|                                   |                          |                                          |                  |                          |
|-----------------------------------|--------------------------|------------------------------------------|------------------|--------------------------|
| Semester<br>IV                    | Subject Code:<br>4BEE02T | Name of Subject:<br>Electrical Machine-I |                  |                          |
| Total Hours Distribution per week |                          |                                          |                  |                          |
| Total Credit: 3                   | Lecture (L): 3 Hrs.      |                                          | Tutorial (T) : - | Practical (P): -         |
| Examination Scheme                |                          |                                          |                  |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                   | Total Marks      | Examination<br>Duration: |
| 30 Marks                          | 20 Marks                 | 50 Marks                                 | 100 Marks        | 3 Hours                  |

**Course Objectives**

To impart the knowledge of the principles, construction, operation, and performance of various types of electrical machines, including DC machines, transformers, and AC machines like induction and synchronous machines

**Course Outcomes**

**After completion of course, the students will be able to**

|   |                                                                                                                                                            |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Determine Equivalent Circuit parameter, Efficiency and Regulation of Single Phase Transformer and to Explain the Phasor groups of Three Phase Transformer. |
| 2 | Analyze different characteristics of D. C. Motor and Speed Control of D.C. Motor.                                                                          |
| 3 | Explain different types of Three Phase Induction Motor and Analyze the characteristics at different Value of Slip.                                         |
| 4 | Analyze Voltage Regulation of Three Phase Synchronous Generator and Behavior of Synchronous Motor with Different Excitations                               |
| 5 | Recognize special machines and single-phase machines.                                                                                                      |

**Course Competencies: -**

- Explain the construction, working principles, and characteristics of different types of electrical machines (transformers, DC machines, induction motors, and synchronous machines).
- Analysing the performance of electrical machines under various operating conditions.
- Knowledge of key parameters like voltage, current, power, efficiency, regulation, and speed-torque characteristics.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 3   | 2   | 3   | 2   | 2   | 1   | 2   | -    | 2    | 3    | -    |
| CO2 | 3                                            | 3   | 3   | 2   | 3   | 2   | 2   | 1   | 2   | -    | 2    | 3    | -    |
| CO3 | 3                                            | 3   | 3   | 2   | 3   | 2   | 2   | 1   | 2   | -    | 2    | 3    | -    |
| CO4 | 3                                            | 3   | 3   | 2   | 3   | 2   | 2   | 1   | 2   | -    | 2    | 3    | -    |
| CO5 | 3                                            | 2   | 3   | 1   | 3   | 2   | 2   | 1   | 2   | -    | 2    | 3    | -    |



# SYLLABUS

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hours | Mapped with CO |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit I: Single Phase Transformer</b><br>Revision of Single-Phase Transformer, Phasor Diagram Under Different Load Conditions, Losses, Equivalent Circuit, Open Circuit and Short Circuit Test, Voltage Regulation, Efficiency, Condition of Maximum Efficiency, All Day Efficiency, Autotransformer,<br><b>Three Phase Transformer:</b> -Principle, construction, Operation and types, Connection and Phasor Groups, Polarity Test, Open Circuit and Short Circuit Test, Conditions of Parallel Operation.                                                                                        | 8     | CO1            |
| <b>Unit II: D.C. Machines</b><br><b>DC Generator:</b> -Construction, Field and Armature systems, Field and Armature windings ( Both Lap and Wave Types), EMF Equation, Characteristics and applications of different types of D.C. Generators, , Armature reaction, commutation, , inter-poles, compensating winding.<br><b>DC Motor:</b> -Principle, Torque Equation, Characteristics and applications of various types of D.C. Motors, Starting of D.C. Motors, Speed control of Series and Shunt motors, Power flow in DC machines, Losses and Efficiency in D.C. machines.                       | 7     | CO2            |
| <b>Unit III: Three Phase Induction Motor</b><br>Construction Details, Types, Principle, Production of Torque, Torque Equation and Condition of Maximum and Starting Torque, Losses and Efficiency, Torque-Slip Characteristics, No Load Test and Blocked Rotor Test. Starting, Speed control, Crawling and Cogging of Three Phase Induction Motor. Applications.                                                                                                                                                                                                                                     | 7     | CO3            |
| <b>Unit IV: Synchronous Machines</b><br><b>Three Phase Synchronous Generator :</b> -Introduction, Constructional features of Salient Pole and Cylindrical Pole Rotor Machines, Introduction to Armature Winding and Field Winding, Winding Factors and EMF Equation, Armature Reaction, Phasor Diagram Under Load Condition, Regulation and Method to Find the Voltage Regulation.<br><b>Three Phase Synchronous Motor:</b> - Construction and Principle, Starting of Synchronous Motor, Motor on Load, Effect of Changing Field Excitation at Constant Load, V and Inverted-V Curves. Applications. | 7     | CO4            |
| <b>Unit V: Single Phase Machines</b><br><b>Single Phase Induction Motor:</b> - Principle and Operation, Double Field Revolving Theory. Principle and Working of Shaded Pole Induction Motor, Split Phase Induction Motor and Capacitor Start Capacitor Run Motor. Applications.<br><b>Principle, Working and Applications of Special Machines:</b> - Universal Motor, Hysteresis Motor, Brushless D. C. Motor , Reluctance Motor                                                                                                                                                                     | 7     | CO5            |

## Text Books

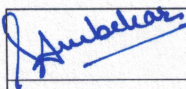
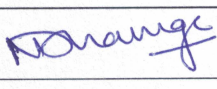
1. "Electrical Machines," I. J. Nagrath, D.P. Kothari, Tata McGraw- Hill Publishing Company Ltd.
2. "Electrical Machinery", P.S.Bhimbra,, Khanna Publishers.
3. "Electrical Machines", P.K. Mukherjee, S. Chakraborty, Dhanat Rai Publications.
4. "Generalized Theory in Electrical Machines" P.S. Bhimbra, Khanna Publishers.
5. "Basic Electrical Engineering," D C Kulshreshtha, The McGraw Hill Higher Education Private Limited, New Delhi.

## References Books

1. "Performance and Design of A.C. Machines," M.G.Say, CBS Publishers and Distributors Pvt. Ltd.
2. "Electrical Machinery", A.F. Fitzgerald, Charles Kingdey, Jr. Stephan D. Umans, Fifth Edition in SI Units, McGrawHill Book Company.

## NPTEL Link:

1. <https://archive.nptel.ac.in/courses/108/105/108105155/>
2. <https://archive.nptel.ac.in/courses/108/105/108105131/>

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
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| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. IV<sup>th</sup> Semester Electrical Engineering**

|                                   |                          |                                               |                        |                          |
|-----------------------------------|--------------------------|-----------------------------------------------|------------------------|--------------------------|
| Semester<br>IV                    | Subject Code:<br>4BEE02P | Name of Subject:<br>Electrical Machine-I Lab. |                        |                          |
| Total Hours Distribution per week |                          |                                               |                        |                          |
| Total Credit: 1                   | Lecture (L):             | Tutorial (T) : -                              | Practical (P): - 2 Hrs |                          |
| Examination Scheme                |                          |                                               |                        |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                        | Total Marks            | Examination<br>Duration: |
| -                                 | 25 Marks                 | 25 Marks                                      | 50Marks                | ---                      |

**Course Objectives**

To gain practical skills by conducting experiments on different types of electrical machines, solidifying their theoretical understanding.

**Course Outcomes**

**After completion of course, the students will be able to**

|   |                                                                                                                  |
|---|------------------------------------------------------------------------------------------------------------------|
| 1 | Evaluate the electrical parameters, efficiency and regulation of transformer                                     |
| 2 | Experiment with the operation and characteristics of DC machine                                                  |
| 3 | Analyze various parameters, characteristics and assess the performance of synchronous and asynchronous machines. |

**Course Competencies: -**

- Ability to analyse and interpret equivalent circuits of electrical machines.
- Performing open-circuit, short-circuit, and load tests on transformers and DC & AC machines.
- Applying different starting, speed control, and braking methods for DC and AC motors.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | -    | 3    | 3    | 2    |
| CO2 | 3                                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | -    | 3    | 3    | 2    |
| CO3 | 3                                            | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 2   | -    | 3    | 3    | 2    |



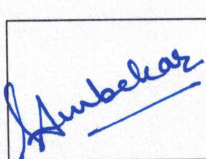
**LIST OF PRACTICALS: -**

| Experiment No | Experiment Based on                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------|
| 1             | To perform Open Circuit and Short Circuit tests on a 1-phase transformer to evaluate efficiency and voltage regulation. |
| 2             | To perform Open Circuit and Short Circuit test on a 3-phase transformer.                                                |
| 3             | To study speed control of a DC shunt motor by varying –<br>(a) field excitation and (b) armature voltage                |
| 4             | To perform load test on a DC shunt motor.                                                                               |
| 5             | To perform load test on a DC shunt generator                                                                            |
| 6             | To perform load test on a 3-phase induction motor                                                                       |
| 7             | To perform No-Load and Blocked rotor tests on a 3-phase induction motor                                                 |
| 8             | To Study starters used for starting AC and DC machines                                                                  |
| 9             | To find the voltage regulation of 3 phase alternator using direct method                                                |
| 10            | To find the voltage regulation of 3 phase alternator using open circuit and short circuit test.                         |
| 11            | To plot the V and inverted V curves of synchronous motor.                                                               |
| 12            | To perform the speed control of 3 phase induction motor.                                                                |
| 13            | To study the single-phase induction motor                                                                               |
| 14            | To study the Brushless D. C. Motor.                                                                                     |
| 15            | Virtual Laboratory Experiments based on the above syllabus.                                                             |

**Note:- Perform any Eight experiment based on the above list.**

**Text Books**

“Laboratory Courses in Electrical Engineering,” S.G.Tarnekar, P.P. Kharbanda, S.B.Bodkhe, S.D. Naik  
S. Chand & Company Ltd., New Delhi

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
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**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B. Tech. IVth Semester Electrical Engineering**

|                                   |                            |                                            |                   |                          |
|-----------------------------------|----------------------------|--------------------------------------------|-------------------|--------------------------|
| Semester<br>IV                    | Subject Code:<br>4BMDEE02T | Name of Subject:<br>Electrical Measurement |                   |                          |
| Total Hours Distribution per week |                            |                                            |                   |                          |
| Total Credit: 2                   | Lecture (L): 2 Hrs         |                                            | Tutorial (T) : -- | Practical (P): --        |
| Examination Scheme                |                            |                                            |                   |                          |
| Mid Sem<br>Examination            | Continual<br>Assessment    | End Sem<br>Examination                     | Total Marks       | Examination<br>Duration: |
| 15 Marks                          | 10 Marks                   | 25 Marks                                   | 50 Marks          | 2 Hours                  |

| <b>Course Objectives</b> |                                                                                                                                                                                                 |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | To provide students with the knowledge and practical skills necessary to accurately measure electrical quantities and understand the principles behind various electrical measuring instruments |

| <b>Course Outcomes</b>                                         |                                                                                                                              |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>After completing the course, students will be able to:-</b> |                                                                                                                              |
| 1                                                              | Develop the knowledge of theoretical and mathematical principles of electrical measuring instruments.                        |
| 2                                                              | Summarize appropriate methods for measurement of various electrical parameters.                                              |
| 3                                                              | Measure and calculate electrical quantities like power, energy etc.                                                          |
| 4                                                              | Analyze the performance characteristics of instrument transformers, including error analysis and factors affecting accuracy. |

**Course Competencies: -**

- Recognizing the different kinds of mistakes (random, systematic, etc.) which could affect measurements, as well as terms like accuracy, precision, and resolution.
- Knowledge of the use of devices such as moving iron ammeters and voltmeters, PMMCs (Permanent Magnet Moving Coil), and instrument transformers (CTs and PTs).
- Measure active and reactive power using various methods

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO2 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO3 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 3    | 2    | -    |
| CO4 | 3                                            | 3   | 2   | 1   | 3   | 2   | 1   | 1   | 1   | -    | 3    | 2    | -    |



## SYLLABUS

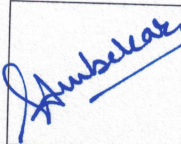
| Details of Topic                                                                                                                                                                                                                                                                                                   | Hours | Mapped with CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit 1: Generalized Measuring Instruments:</b>                                                                                                                                                                                                                                                                  | 06    | CO1            |
| Classification of Instruments, forces acting in Indicating instruments, Moving iron, PMMC type instruments, Static and Dynamic characteristics and performance of instruments, Errors in measurements, loading effect of instruments.                                                                              |       |                |
| <b>Unit 2: Measurement of RLC Elements</b>                                                                                                                                                                                                                                                                         | 06    | CO2            |
| Measurement of Resistance: classification, Measurement of medium Resistance: - Wheatstone Bridge. Low resistance: - Kelvin's Double Bridge. High resistance:- Loss of charge Method.<br>Measurement of inductance using Maxwell's inductance-capacitance bridge, Measurement of Capacitance using Schering bridge. |       |                |
| <b>Unit 3: Measurement of Power and Energy</b>                                                                                                                                                                                                                                                                     | 06    | CO3            |
| Power in D.C. Circuits. And Power in A.C. circuits , Blondel's Theorem, Measurement of active, reactive and apparent power in polyphase circuits.<br>Measurement of Energy in single phase circuits, Induction type Energy meter and digital energy meters.                                                        |       |                |
| <b>Unit 4: Instrument Transformers</b>                                                                                                                                                                                                                                                                             | 06    | CO4            |
| General theory of Instrument transformers, various ratios, burden, characteristics and Phasor diagram of Current transformer and potential transformers & extension of range using C.T. & P.T., errors in instrument transformers.                                                                                 |       |                |

### Text Books

1. A course in Electrical and Electronics Measurement and Instrumentation: 11ed, A. K. Sawhney, Dhanpat Rai & Sons, Delhi 1994
2. Electrical Measurement and Measuring Instruments: 3ed, E. W. Golding, F. C. Wheeler's student edition, 1994
3. Instrumentation Measurement and Analysis: B. C. Nakra, K. K. Chaudhary

### References Books

1. Electrical Measurement and Instrumentation: R. K. Rajput, 2ed, S. Chand & Company Ltd., 2009.
2. Electrical Measurement and Instrumentation: U. A. Bakshi, K. A. Bakshi, A. U. Bakshi, 1ed, Technical publication, 2008.
3. Electrical Measurement and Measuring Instruments: J. B. Gupta, S.K. Kataria & Sons
4. Electrical Measurement and Measurement Technique, W. D. Cooper, Prentice Hall International publication.

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
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**KDK College of Engineering, Nagpur**

**B. Tech.**

**CE/ ME/ EE/ CSE/ IT/ AI&DS/ ETC Engineering**

|                             |                              |                                                     |                  |                       |
|-----------------------------|------------------------------|-----------------------------------------------------|------------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - A | Name of Subject:<br>Corporate Social Responsibility |                  |                       |
| Total Distribution per week |                              |                                                     |                  |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                                     | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                                     |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                            | Total Marks      | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                                            | 50 Marks         | 2 Hrs                 |

| <b>Course Objectives</b> |                                                                                                         |
|--------------------------|---------------------------------------------------------------------------------------------------------|
| 1                        | To introduce students to the concept, principles, and importance of CSR in business and society.        |
| 2                        | To help students understand ethical, environmental, and social challenges in corporate decision-making. |
| 3                        | To explore CSR practices in India and globally, including legal and regulatory frameworks.              |
| 4                        | To develop students' ability to plan and evaluate CSR initiatives.                                      |

| <b>Course Outcomes</b>                                           |                                                                                                                                                      |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>After completion of syllabus, the student will be able to</b> |                                                                                                                                                      |
| 1                                                                | Define CSR and explain its significance in the modern business environment.                                                                          |
| 2                                                                | Evaluate CSR in different areas and implement the concept of TBL.                                                                                    |
| 3                                                                | Analyze legal and ethical dimensions along with the planning and implementation of corporate responsibility.                                         |
| 4                                                                | Reflect on their own ethical responsibilities as future professionals and evaluate the CSR strategies and activities of Indian and global companies. |

| <b>Course Competencies</b> |                                                                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                          | Understand and apply the concepts, principles, and significance of CSR in business and society.                                                            |
| 2                          | Evaluate CSR initiatives in various domains and analyze their ethical, legal, and environmental implications.                                              |
| 3                          | Reflect on their personal responsibilities as future professionals and contribute to sustainable and responsible corporate practices locally and globally. |

KDK College of Engineering, Nagpur  
Faculty of Science and Technology  
B. Tech.

CE/ ME/ EE/ CSE/ IT/ AIDS/ ETC Engineering

|                             |                              |                                 |                  |                       |
|-----------------------------|------------------------------|---------------------------------|------------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - B | Name of Subject:<br>Life Skills |                  |                       |
| Total Distribution per week |                              |                                 |                  |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                 | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                 |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination        | Total Marks      | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                        | 50 Marks         | 2 Hrs                 |

| Course Objectives |                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------|
| 1                 | To enable students to understand the significance of self-awareness and life skills.                                |
| 2                 | To develop self-awareness, emotional intelligence, and to equip students with skills for stress and time management |
| 3                 | To understand the importance of decision-making, and critical thinking.                                             |
| 4                 | To foster leadership skills, interpersonal relationships and teamwork.                                              |

| Course Outcomes                                           |                                                                                                                  |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                  |
| 1                                                         | Apply essential life skills for personal and professional development.                                           |
| 2                                                         | Develop self-awareness, emotional intelligence, and to equip students with skills for stress and time management |
| 3                                                         | Learn and implement the decision-making, and critical thinking.                                                  |
| 4                                                         | Apply leadership skills, interpersonal relationships and teamwork.                                               |

| Course Competencies |                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                   | Understand and apply essential life skills for personal and professional growth.                                                                      |
| 2                   | Develop self-awareness, emotional intelligence, and time management for handling stress effectively.                                                  |
| 3                   | Demonstrate sound decision-making, critical thinking, interpersonal relationships, and leadership abilities in real-life and professional situations. |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | -   | 2   | 3   | 2   | 2   | 2    | 3    |
| CO2           | -                  | -   | -   | -   | -   | 2   | 3   | 2   | 2   | 2    | 3    |
| CO3           | -                  | 2   | 2   | 1   | -   | 1   | 2   | 1   | 2   | 2    | 3    |
| CO4           | -                  | 1   | 2   | -   | -   | 2   | 2   | 3   | 3   | 3    | 3    |

| Course Contents                                                                                                                                                                                                                                                                              |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I : Introduction to Life Skills and Personal Development<br>Concept and importance of life skills, Types of life skills as defined by WHO, Role of life skills in personal and professional development, Value education and self-discipline, Life skills vs soft skills vs hard skills | 8 | CO1            |
| Unit II : Self-Awareness and Emotional Intelligence<br>Understanding self: SWOT analysis, Johari Window for self-assessment, Emotional Intelligence: Definition and domains (Goleman's model), Managing emotions and empathy, Stress and time management techniques                          | 8 | CO2            |
| Unit III : Decision-Making and Critical Thinking<br>Types and styles of decision-making. Problem-solving techniques and frameworks, Critical thinking process and tools (e.g., root cause analysis), Barriers to effective decision-making, Case studies and exercises                       | 8 | CO3            |
| Unit IV Leadership and Teamwork Skills:<br>Basics of leadership and leadership styles, Team building, group dynamics, Interpersonal relationships in personal and professional life, Conflict resolution and negotiation skills, Communication for effective teamwork                        | 8 | CO4            |

| Text/ Reference Books |                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------|
| 1                     | Barun K. Mitra, "Personality Development & Soft Skills", Oxford Publishers        |
| 2                     | David, A. Whetten and Kim S. Cameron. Developing Management S&Is. 8th ed. Pearson |
| 3                     | Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd,          |

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| Chairman BoS                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                         |

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|                             |                              |                                       |             |                       |
|-----------------------------|------------------------------|---------------------------------------|-------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - C | Name of Subject:<br>Digital Marketing |             |                       |
| Total Distribution per week |                              |                                       |             |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                       |             | Practical (P): 0      |
| Examination Scheme          |                              |                                       |             |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination              | Total Marks | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                              | 50 Marks    | 2 Hrs                 |

| Course Objectives |                                                                            |
|-------------------|----------------------------------------------------------------------------|
| 1                 | To understand the basic concept of Digital Marketing.                      |
| 2                 | To comprehend the concept of Online Marketing.                             |
| 3                 | To perceive the importance of social media platforms in Digital Marketing. |
| 4                 | To learn and utilize social media as tools for digital marketing.          |

| Course Outcomes                                           |                                                     |
|-----------------------------------------------------------|-----------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                     |
| 1                                                         | Understand the core concepts of Digital Marketing   |
| 2                                                         | Summarize the core concepts of Online Marketing.    |
| 3                                                         | Understand the social media platforms for business. |
| 4                                                         | Apply the various tools of digital marketing        |

| Course Competencies |                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------|
| 1                   | Understand and explain the fundamental concepts of digital and online marketing.                                |
| 2                   | Demonstrate the ability to identify and use major social media platforms for business marketing purposes.       |
| 3                   | Apply key digital marketing tools and techniques effectively to develop and manage online marketing strategies. |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO 1               | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | 2                  | 2   | -   | -   | -   | 1   | -   | -   | -   | 2    | 2    |
| CO2           | 2                  | 2   | -   | -   | -   | 1   | -   | -   | -   | 2    | 2    |
| CO3           | 2                  | 2   | -   | -   | -   | 2   | -   | -   | 2   | 3    | 2    |
| CO4           | 2                  | 3   | 3   | -   | -   | 2   | -   | -   | 2   | 3    | 2    |

| Course Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Hours | Mapped with CO |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|
| <b>Unit I : Introduction to Digital Marketing:</b><br>The Concept, Need & Evolution of Digital Marketing. Reason for growing importance of Digital Marketing in India, Digital Marketing: Types & Examples. Case Study on Digital Marketing                                                                                                                                                                                                                                                      | 8     | CO1            |
| <b>Unit II : Online Marketing:</b><br>The concept of Digital Marketing Mix, 7 P's of Online Marketing: Product, Price, Promotion, Place People, Process, Physical evidence, Methods of Online Marketing promotion, Mobile Marketing & its types, concept of Email marketing, types of emails                                                                                                                                                                                                     | 8     | CO2            |
| <b>Unit III : Social Media Marketing:</b><br>Concept, Types of social media, social media for Business use, Facebook for Business, Developing Facebook Marketing Strategy Facebook Advertising, Instagram for advertisers-Marketing tools and Techniques, Instagram Best Practices Snapchat for Business, Twitter Usage for business, Terminology and Account Security, Advertising on Twitter, Twitter for Marketing. LinkedIn for Business, LinkedIn for Advertising, LinkedIn for Recruiters. | 8     | CO3            |
| <b>Unit IV Tools for Digital Marketing:</b><br>Overview of Hootsuite: Dashboard and Features, Social Media Listening and Monitoring, Social Media Publishing and Scheduling. Campaign using Mailchimp: Overview of Mailchimp Features and Interface, Building Email Lists and Segmentation, Creating Email Campaigns: Templates and Content Design. Advertising tools: Google Ads, Canva Interface.                                                                                              | 8     | CO4            |

| Text Books |                                                                                                                       |
|------------|-----------------------------------------------------------------------------------------------------------------------|
| 1          | Principles and Practice of Management: L M Prasad, Sultan Chand & Sons educational. New Delhi                         |
| 2          | Principles of Management, Ramaswamy T., Himalaya Publication                                                          |
| 3          | Essentials of Management, Harold Koontz, O'Donnell and Heinz Weihrich, 2012, New Delhi, 9th edition, Tata McGraw Hill |

|   |                                                                                                        |
|---|--------------------------------------------------------------------------------------------------------|
| 4 | Fundamentals of Management, Stephen P. Robbins, David A. Decenzo, 2016, Pearson Education, 9th Edition |
| 5 | Management Today- Principles and Practice / Edition-13th reprint                                       |

| Reference Books |                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------|
| 1               | Management - Text & Cases, Satya Raju, PHI, New Delhi                                         |
| 2               | Management Fundamentals: Concepts, Applications, & Skill Development, 6th edition, Sage. 2014 |
| 3               | Principles Of Management, Richard L. Daft, Cengage Learning, 2009                             |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
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|                             |                              |                                          |                  |                       |
|-----------------------------|------------------------------|------------------------------------------|------------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - D | Name of Subject:<br>Basic of Mutual Fund |                  |                       |
| Total Distribution per week |                              |                                          |                  |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                          | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                          |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                 | Total Marks      | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                                 | 50 Marks         | 2 Hrs                 |

| <b>Course Objectives</b> |                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 1                        | To introduce students to the fundamental concepts, structure, and key terminology of mutual funds.                                 |
| 2                        | To provide an understanding of various mutual fund types, investment plans, and their suitability for different investor profiles. |
| 3                        | To equip students with the ability to evaluate mutual fund performance and understand the investment process.                      |
| 4                        | To familiarize students with the regulatory environment, tax implications, and emerging trends in mutual fund investment.          |

| <b>Course Outcomes</b>                                    |                                                                                                                                                         |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                                                                         |
| 1                                                         | 1. Understand the structure, key components, features, and risks of mutual funds along with essential financial terms like NAV, AUM, and Expense Ratio. |
| 2                                                         | Identify and compare various types of mutual funds and investment options, assessing their suitability based on different investor goals and profiles.  |
| 3                                                         | Evaluate mutual fund performance using key indicators (Sharpe Ratio, Alpha, Beta), and apply knowledge of fund selection and investment procedures.     |
| 4                                                         | Explain the regulatory framework of mutual funds, assess taxation aspects, and recognize current trends such as digital platforms and robo-advisors.    |

| <b>Course Competencies</b> |                                                                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                          | Understand and explain the structure, types, and objectives of mutual funds.                                                                       |
| 2                          | Interpret and analyze mutual fund performance indicators like NAV, risk, and return.                                                               |
| 3                          | Demonstrate and develop the ability to select suitable mutual fund schemes based on investor profiles, financial goals, and regulatory guidelines. |

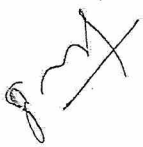
| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO 1          | 3                  | 2   | -   | -   | -   | 2   | -   | -   | -   | 2    | 1    |
| CO 2          | 2                  | 3   | 2   | -   | -   | 2   | -   | -   | -   | 2    | -    |
| CO 3          | 2                  | 3   | 3   | -   | -   | 2   | -   | -   | -   | 3    | 1    |
| CO 4          | 1                  | 2   | 2   | -   | -   | 3   | -   | -   | -   | 3    | 2    |

| Course Contents                                                                                                                                                                                                                                                                                          |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I : Fundamentals of Mutual Funds                                                                                                                                                                                                                                                                    | 8 | CO1            |
| Expense Ratio Definition, Features, and Benefits of Mutual Funds, Limitations and Risks Associated, Structure of Mutual Funds: Sponsor, AMC, Trustee, Custodian, Key Terms: NAV, AUM, Exit Load, Expense Ratio                                                                                           |   |                |
| Unit II : Types and Classification of Mutual Funds                                                                                                                                                                                                                                                       | 8 | CO2            |
| Open-ended vs. Close-ended Funds, Types: Equity, Debt, Hybrid, Index Funds, ETFs, Investment Plans: SIP, STP, SWP, Suitability of Different Funds for Investor Profiles                                                                                                                                  |   |                |
| Unit III : Evaluation and Investment Process                                                                                                                                                                                                                                                             | 8 | CO3            |
| Performance Indicators: Risk & Return, Sharpe Ratio, Alpha, Beta, Understanding Fund Fact Sheets and Ratings (CRISIL, Value Research), How to Invest: Online and Offline Methods, KYC Compliance and Investor Onboarding, Fund Selection Based on Financial Goals, Role of Fund Managers and Fund Houses |   |                |
| Unit IV: Regulatory Framework, Taxation & Trends                                                                                                                                                                                                                                                         | 8 | CO4            |
| Regulatory Bodies: SEBI and AMFI, Investor Protection Mechanisms and Grievance Redressal, Tax Implications: Capital Gains, Dividends, and ELSS<br>Emerging Trends: Direct Plans, Robo-Advisors, Digital Platforms                                                                                        |   |                |

| Text Books |                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------|
| 1          | Mutual Funds in India: Structure, Performance and Regulations"<br>By Amitabh Gupta – Oxford University Press |



| Reference Books |                                                                                    |
|-----------------|------------------------------------------------------------------------------------|
| 1               | Guide to Indian Mutual Funds" – CNBC TV18                                          |
| 2               | "The Intelligent Investor" – Benjamin Graham (Chapters relevant to fund investing) |
| 3               | AMFI Study Material – Mutual Fund Distributors Certification                       |
| 4               | NISM Mutual Fund Foundation Certification Booklet                                  |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
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|                             |                              |                                                |             |                       |
|-----------------------------|------------------------------|------------------------------------------------|-------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - E | Name of Subject:<br>Introduction to Psychology |             |                       |
| Total Distribution per week |                              |                                                |             |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                                |             | Practical (P): 0      |
| Examination Scheme          |                              |                                                |             |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                       | Total Marks | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                                       | 50 Marks    | 2 Hrs                 |

| Course Objectives |                                                                                             |
|-------------------|---------------------------------------------------------------------------------------------|
| 1                 | Introduce the basic concepts and principles of psychology relevant to human behavior.       |
| 2                 | Familiarize students with psychological processes such as perception, learning, and memory. |
| 3                 | Enhance self-awareness, emotional intelligence, and interpersonal effectiveness.            |
| 4                 | Apply psychological understanding to academic, professional, and everyday contexts.         |

| Course Outcomes                                           |                                                                                             |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                             |
| 1                                                         | Describe the scope, approaches, and applications of psychology.                             |
| 2                                                         | Explain key psychological processes like attention, learning, motivation, and memory.       |
| 3                                                         | Demonstrate understanding of personality, emotional intelligence, and interpersonal skills. |
| 4                                                         | Apply psychological insights to improve academic, professional, and social functioning.     |

| Course Competencies |                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------|
| 1                   | Understand and explain the fundamental concepts and psychological processes underlying human behavior.             |
| 2                   | Demonstrate awareness of self, emotional intelligence, and interpersonal effectiveness.                            |
| 3                   | Apply psychological principles to enhance academic performance, professional development, and personal well-being. |



| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | -   | 2   | -   | -   | 1   | -    | 2    |
| CO2           | -                  | -   | -   | -   | -   | 1   | -   | -   | 1   | -    | 2    |
| CO3           | --                 | -   | -   | -   | -   | 2   | 2   | 2   | 2   | 1    | 2    |
| CO4           | -                  | -   | -   | -   | -   | 3   | 2   | 2   | 3   | 2    | 3    |

| Course Contents                                                                                                                                                                                                                                                      |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I: Introduction to Psychology<br>Definition, nature, and goals of psychology. History and major schools: Structuralism, Functionalism, Behaviorism, Psychoanalysis, Humanism, Branches of psychology, Relevance of psychology to engineering and technology     | 8 | CO1            |
| Unit II: Cognitive and Emotional Processes<br>Sensation and perception, Attention and learning (classical and operant conditioning), Memory and forgetting, Motivation and emotion: theories and types                                                               | 8 | CO2            |
| Unit III: Personality and Intelligence<br>Concept and assessment of personality (Freud, Big Five), Emotional intelligence and stress management, Types of intelligence and IQ testing, Self-awareness and self-regulation                                            | 8 | CO3            |
| Unit IV: Psychology in Real Life<br>Application in academics: focus, time management, stress reduction, Group behavior, leadership, and communication, Conflict resolution and interpersonal relationships, Psychology at the workplace: motivation and productivity | 8 | CO4            |

| Text Books |                                                                              |
|------------|------------------------------------------------------------------------------|
| 1          | "Introduction to Psychology" by Morgan, King, Weisz & Schopler – McGraw Hill |
| 2          | "Psychology" by Robert A. Baron – Pearson Education                          |

| Reference Books |                                                                     |
|-----------------|---------------------------------------------------------------------|
| 1               | Understanding Psychology” by Feldman – McGraw Hill                  |
| 2               | Emotional Intelligence” by Daniel Goleman – Bantam Books            |
| 3               | NPTEL & SWAYAM modules on Psychology (Govt. of India platforms)     |
| 4               | Psychology: The Science of Behavior” by Carlson & Buskist – Pearson |

|                                                                                   |                                                                                   |                                                                                   |  |                    |         |                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--------------------|---------|------------------------------------------|
|  |  |  |  | June 2025          | 1.00    | Applicable<br>for AY 2025-<br>26 onwards |
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|                             |                              |                                                    |                  |                       |
|-----------------------------|------------------------------|----------------------------------------------------|------------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - F | Name of Subject:<br>World Geography & Global Issue |                  |                       |
| Total Distribution per week |                              |                                                    |                  |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                                    | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                                    |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                           | Total Marks      | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                                           | 50 Marks         | 2 Hrs                 |

| <b>Course Objectives</b> |                                                                                 |
|--------------------------|---------------------------------------------------------------------------------|
| 1                        | 1. Build foundational knowledge of physical and political geography.            |
| 2                        | Enable analysis of the link between geography and global issues.                |
| 3                        | Foster understanding of demographic, environmental, and development challenges. |
| 4                        | Develop spatial thinking, critical analysis, and global awareness.              |

| <b>Course Outcomes</b>                                    |                                                                                              |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                              |
| 1                                                         | Identify and describe key physical and political features of the world using maps.           |
| 2                                                         | Explain how geography influences cultural, political, and economic systems.                  |
| 3                                                         | Analyze population trends, urbanization, and environmental issues from a global perspective. |
| 4                                                         | Evaluate international policies and treaties addressing global challenges.                   |

| <b>Course Competencies</b> |                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1                          | Understand and interpret key physical and political features of the world using spatial tools like maps.                 |
| 2                          | Analyze the relationship between geography and global issues such as culture, politics, population, and the environment. |
| 3                          | Apply geographic knowledge to critically evaluate global challenges and international responses.                         |

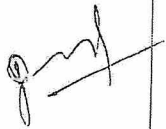
| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | 2   | -   | -   | -   | 2   | 1    | 2    |
| CO2           | -                  | -   | -   | -   | -   | 3   | 2   | -   | 2   | 1    | 2    |
| CO3           | -                  | -   | -   | -   | -   | 3   | 2   | -   | 2   | 1    | 3    |
| CO4           | -                  | -   | -   | -   | -   | 3   | 2   | -   | 2   | 2    | 3    |

| Course Contents                                                                                                                                                                                                                        |   | Mapped with CO |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I: Fundamentals of Geography and Mapping                                                                                                                                                                                          | 8 | CO1            |
| Scope of geography: physical and human, Latitude, longitude, and time zones, World continents, oceans, mountains, rivers, and deserts, Basics of maps, scales, and interpretation                                                      |   |                |
| Unit II: World Regions and Geopolitical Dynamics                                                                                                                                                                                       | 8 | CO2            |
| Global regional divisions: Asia, Europe, Africa, Americas, Oceania, Climate zones and ecosystems, Natural resource distribution and conflicts Case studies: boundary disputes and political geography                                  |   |                |
| Unit III: Population, Migration, and Urban Growth                                                                                                                                                                                      | 8 | CO3            |
| Demographic indicators and population distribution, Migration trends and causes, Urbanization and challenges of megacities, Sustainable urban development                                                                              |   |                |
| Unit IV: Environmental Challenges and Global Governance                                                                                                                                                                                | 8 | CO4            |
| Global warming, biodiversity loss, pollution, Natural disasters and risk mitigation, UN Sustainable Development Goals (SDGs), Climate treaties: Paris Agreement, Kyoto Protocol, Role of UN, World Bank, WHO, WTO in global governance |   |                |

| Text Books |                                                                                                                |
|------------|----------------------------------------------------------------------------------------------------------------|
| 1          | World Regional Geography: Global Patterns, Local Lives – Lydia Mihelcic Pulsipher & Alex Pulsipher (Macmillan) |
| 2          | Global Issues: An Introduction – John L. Seitz & Kristen A. Hite (Wiley-Blackwell)                             |



| Reference Books |                                                                                                 |
|-----------------|-------------------------------------------------------------------------------------------------|
| 1               | Geography of the World – DK Publications                                                        |
| 2               | Environmental Geography – Savindra Singh                                                        |
| 3               | Global Problems and the Culture of Capitalism – Richard H. Robbins                              |
| 4               | World Bank Data Reports – <a href="https://data.worldbank.org/">https://data.worldbank.org/</a> |
| 5               | United Nations SDG Reports – <a href="https://sdgs.un.org/">https://sdgs.un.org/</a>            |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
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|                             |                              |                                                 |                  |                       |
|-----------------------------|------------------------------|-------------------------------------------------|------------------|-----------------------|
| Semester IV                 | Subject Code:<br>4BOE02T - G | Name of Subject:<br>Intercultural Communication |                  |                       |
| Total Distribution per week |                              |                                                 |                  |                       |
| Total Credit: 2             | Lecture (L): 2               | Tutorial (T): 0                                 | Practical (P): 0 |                       |
| Examination Scheme          |                              |                                                 |                  |                       |
| Continuous Assessment       | Mid Semester Examination     | End Semester Examination                        | Total Marks      | Examination Duration: |
| 10 Marks                    | 15 Marks                     | 25 Marks                                        | 50 Marks         | 2 Hrs                 |

| Course Objectives |                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1                 | To introduce foundational concepts and models of intercultural communication.                                         |
| 2                 | To explore the influence of cultural values, norms, and dimensions on communication behavior.                         |
| 3                 | To develop verbal and non-verbal communication skills for effective cross-cultural interaction.                       |
| 4                 | To equip students with strategies for managing intercultural barriers, conflicts, and enhancing global collaboration. |

| Course Outcomes                                           |                                                                                                        |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                                        |
| 1                                                         | Define and explain the basic concepts, models, and significance of intercultural communication.        |
| 2                                                         | Analyze the impact of cultural frameworks and dimensions on communication styles.                      |
| 3                                                         | Demonstrate verbal and non-verbal communication competence in multicultural settings.                  |
| 4                                                         | Identify communication barriers and apply conflict-resolution strategies in diverse cultural contexts. |

| Course Competencies |                                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------|
| 1                   | Understand and explain key concepts, models, and the role of culture in shaping communication behaviors.      |
| 2                   | Analyze and interpret cultural values, beliefs, and communication patterns across diverse societies.          |
| 3                   | Demonstrate and apply effective verbal and non-verbal communication strategies in multicultural environments. |
| 4                   | Develop and use conflict resolution and collaboration skills in intercultural and global contexts.            |

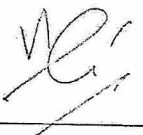


| CO_PO Mapping |                    |     |     |     |     |     |     |     |     |      |      |
|---------------|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
|               | Programme Outcomes |     |     |     |     |     |     |     |     |      |      |
|               | PO1                | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1           | -                  | -   | -   | -   | -   | 2   | 3   | 2   | 3   | -    | 2    |
| CO2           | -                  | -   | -   | -   | -   | 3   | 3   | 2   | 3   | -    | 2    |
| CO3           | -                  | -   | -   | -   | -   | 2   | 3   | 2   | 3   | -    | 2    |
| CO4           | -                  | -   | -   | -   | -   | 3   | 3   | 2   | 3   | -    | 3    |

| Course Contents                                                                                                                                                                                                                                                                                           |   | Mapped with CO |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----------------|
| Unit I: Fundamentals of Intercultural Communication                                                                                                                                                                                                                                                       | 8 | CO1            |
| Definition and nature of intercultural communication, Importance in a globalized world, Basic models of communication (linear, transactional, interactive), Culture and communication: interdependence, Key terms: ethnocentrism, cultural relativism, stereotype, perception                             |   |                |
| Unit II: Cultural Frameworks and Communication Styles                                                                                                                                                                                                                                                     | 8 | CO2            |
| Hofstede's Cultural Dimensions (individualism vs collectivism, power distance, etc.), Edward T. Hall's High-Context vs. Low-Context Cultures, Value orientations and worldviews, Impact of cultural norms and beliefs on verbal communication, Case studies from global business and diplomacy            |   |                |
| Unit III: Verbal and Non-verbal Intercultural Competence                                                                                                                                                                                                                                                  | 8 | CO3            |
| Verbal styles: direct vs. indirect, expressive vs. restrained, Non-verbal cues: kinesics, proxemics, paralanguage, haptics, Listening skills in intercultural contexts, Cross-cultural presentations and meetings, Role plays and practice in multicultural teams                                         |   |                |
| Unit IV: Barriers, Conflict Management & Global Collaboration                                                                                                                                                                                                                                             | 8 | CO4            |
| Types of intercultural communication barriers: linguistic, perceptual, attitudinal. Strategies for overcoming anxiety and uncertainty, Conflict resolution approaches across cultures, Building intercultural sensitivity and emotional intelligence, Intercultural competence in teams and organizations |   |                |

| Text Books |                                                                                                                            |
|------------|----------------------------------------------------------------------------------------------------------------------------|
| 1          | "Intercultural Communication in Contexts" – Judith N. Martin & Thomas K. Nakayama<br>McGraw Hill Education, Latest Edition |
| 2          | Intercultural Communication: A Critical Introduction" – Ingrid Piller<br>Edinburgh University Press                        |

| Reference Books |                                                                                      |
|-----------------|--------------------------------------------------------------------------------------|
| 1               | Culture and Interpersonal Communication” – William B. Gudykunst & Stella Ting-Toomey |
| 2               | “The Culture Map” – Erin Meyer                                                       |
| 3               | “Bridging the Culture Gap” – Penny Carté & Chris Fox                                 |
| 4               | NPTEL Course: Intercultural Communication by IIT Kharagpur                           |

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|-----------------------------------------|
|  |  |  | June 2025          | 1.00    | Applicable for<br>AY 2025-26<br>onwards |
| Chairman BoS                                                                      | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                         |



**KDK College of Engineering, Nagpur**  
**Faculty of Science and Technology**  
**B.Tech. IV Semester Electrical Engineering**

|                                   |                          |                                                        |                   |                          |
|-----------------------------------|--------------------------|--------------------------------------------------------|-------------------|--------------------------|
| Semester<br>IV                    | Subject Code:<br>4BEE03P | Name of Subject:<br>Introduction to Python Programming |                   |                          |
| Total Hours Distribution per week |                          |                                                        |                   |                          |
| Total Credit: 2                   | Lecture (L): 1 Hrs       |                                                        | Tutorial (T) : -- | Practical (P):-2         |
| Examination Scheme                |                          |                                                        |                   |                          |
| Mid Sem<br>Examination            | Continuous<br>Assessment | End Sem<br>Examination                                 | Total Marks       | Examination<br>Duration: |
|                                   | 25 Marks                 | 25 Marks                                               | 50 Marks          |                          |

**Course Objectives**

To provide practical, hands-on experience with the Python programming language. This involves implementing algorithms, building programs, and using Python's features to solve problems.

**Course Outcomes**

**After completing the practical course, students will be able to:-**

|   |                                                                                                             |
|---|-------------------------------------------------------------------------------------------------------------|
| 1 | Student should be able develop the application specific codes using python.                                 |
| 2 | Ability to create practical and contemporary applications using Functions, Modules and Regular Expressions. |
| 3 | Ability to explore python data structures like Lists, Tuples, Sets and dictionaries                         |

**Course Competencies:**

- Understand Python fundamentals including variables, operators, identifiers, and input/output operations.
- Develop control flow logic using conditional statements, loops, functions, modules, and apply exception handling effectively.
- Implement and manipulate basic data structures in Python such as strings, lists, tuples, dictionaries, and sets for efficient data handling.

**CO-PO Articulating Matrix:**

| CO  | Program Outcomes & Program Specific Outcomes |     |     |     |     |     |     |     |     |      |      |      |      |
|-----|----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|     | PO1                                          | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
| CO1 | 3                                            | 3   | 3   | 3   | 3   | 2   | 1   | 1   | 1   | -    | 2    | 2    | 3    |
| CO2 | 3                                            | 3   | 3   | 3   | 3   | 2   | 1   | 1   | 1   | -    | 2    | 2    | 3    |
| CO3 | 3                                            | 3   | 3   | 3   | 3   | 2   | 1   | 1   | 1   | -    | 2    | 2    | 3    |



## Details of Topic

### Introduction To Python

Introduction To Python, Operators, Identifiers, Variables, Relational Operators, User Input And Output

### Loops Modules & Functions

Control Statement - Conditional Statement Like If, Else, Elif, Loop- While, For, Loop Control Statement - Break, Continue, Pass, Introduction To Functions, Logic With Python Functions, Keyword Arguments, Args And Kwargs, Return Statement, Lambda, Map And Filter, Import Module, Datetime With Python And Exception Handling.

### Fundamental Data Structures

Strings – Indexing, Slicing, Methods For Strings – Isupper, Upper, Lower, Find, Swapcase Etc, List – Indexing, Slicing, Copy (Deep And Shallow), Methods For List – len, append, extend, sort, insert, delete, pop, max, min, sum, count etc, List Comprehensions, TUPLES – discard, remove and pop, DICTIONARY – creation method, lists of tuple in dictionary, list of list in dictionary, len and del in dictionary, Deep and shallow copy in dictionary, Methods for dictionary, dictionary comprehension, SETS

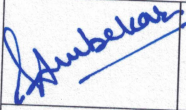
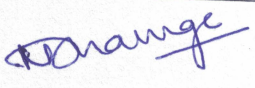
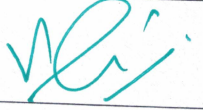
### LIST OF PRACTICALS:

| Pr. No. | List of Practical                                                                                                                                                                                                     |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Write a program to print the sum of all the even numbers in the range 1 - 50 and print the even sum.                                                                                                                  |
| 2       | Write a Program to display all prime numbers within an interval of 20 and 50.                                                                                                                                         |
| 3       | Write a program that prints the integer from 1 to 100, but for multiples of 3 print 'FIZZ' instead of number and for multiples of five print 'BUZZ'. For numbers which are multiples of both 3 and 5 print 'FIZZBUZZ' |
| 4       | Write a program that returns the lesser of two given numbers if both numbers are even, but returns the greater if one or both numbers are odd.                                                                        |
| 5       | Write a program to print the following patterns using loop:<br>*<br>**<br>***<br>****                                                                                                                                 |
| 6       | Print Every word from the below sentence which has even number of letters –<br>St- 'print only the word that starts with s in this sentence'                                                                          |
| 7       | Write a program to perform the given operations on a list: i. add ii. insert iii. slicing                                                                                                                             |
| 8       | Write a program to check if a given key exists in a dictionary or not.                                                                                                                                                |
| 9       | Write a python function that takes a list and return anew list with unique elements of the first list. For example, Sample List =[1,1,1,2,2,3,3,4] Unique List = [1,2,3,4]                                            |
| 10      | Write a program for opening a Bank account, deposit of money and withdrawal of money. Also generate a 4 digit unique code for each transaction                                                                        |
| 11      | Write a program to print next 5 days starting from today                                                                                                                                                              |

**Note:- Perform any Eight experiment based on the above list.**

### References Books

Computer Practices Laboratory (Python Programming), by V. Rameshbabu, M. Munirathinam, VRB Publishers Private Limited.

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2024-25 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



KDK College of Engineering, Nagpur  
B. Tech.  
(Ability Enhancement Course AEC-2)

|                                   |                             |                                                     |                   |                       |
|-----------------------------------|-----------------------------|-----------------------------------------------------|-------------------|-----------------------|
| Semester:<br>IV                   | Subject Code:<br>4BAE-01T-A | Name of Subject:<br>Introduction to German Language |                   |                       |
| Total Hours Distribution per week |                             |                                                     |                   |                       |
| Total Credit: 2                   | Lecture (L): 2Hrs           |                                                     | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                             |                                                     |                   |                       |
| Mid Semester Examination          | Continual Assessment        | End Semester Examination                            | Total Marks       | Examination Duration: |
| 15                                | 10                          | 25                                                  | 50                | 2                     |

| Course Objectives |                                                           |
|-------------------|-----------------------------------------------------------|
| 1                 | Information about life, Jobs, and Universities in Germany |
| 2                 | Introduction to German culture                            |

| Course Outcomes                                            |                                                    |
|------------------------------------------------------------|----------------------------------------------------|
| After completion of syllabus, the students will be able to |                                                    |
| CO1                                                        | Understand everyday phrases and simple expressions |
| CO2                                                        | Use basic expressions in daily situations          |
| CO3                                                        | Introduce yourself and other people                |
| CO4                                                        | Ask and answer basic questions with confidence     |

| Course Competency |                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------|
| 1                 | Develop grammatical accuracy and vocabulary for effective sentence construction and verbal expression. |
| 2                 | Demonstrate effective communication in German language                                                 |

CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 1   | -   | -   | -   | -   | -   | -   | -   | 3   | -    | 3    |
| CO2                                               | 1   | -   | -   | -   | -   | -   | -   | 1   | 3   | -    | 3    |
| CO3                                               | -   | -   | -   | -   | -   | -   | -   | 1   | 3   | -    | 3    |
| CO4                                               | -   | -   | -   | -   | 2   | -   | -   | -   | 3   | -    | 3    |

# SYLLABUS

| Details of Topic                              | Hours | Mapped CO |
|-----------------------------------------------|-------|-----------|
| <b>Unit 1: Basic Grammar</b>                  | 6     | CO1       |
| The Alphabet                                  |       |           |
| Colors                                        |       |           |
| Number                                        |       |           |
| Family                                        |       |           |
| Body                                          |       |           |
| Clothing                                      |       |           |
| At home                                       |       |           |
| Food & Beverages                              |       |           |
| Animals                                       |       |           |
| Professions                                   |       |           |
| Weather                                       |       |           |
| Leisure Time Activities                       |       |           |
| <b>Unit 2: Reading &amp; Listening skills</b> | 8     | CO2       |
| Emotions & Adjectives                         |       |           |
| Countries & Nations                           |       |           |
| Means of Transport                            |       |           |
| Conjugation Of Regular Verbs                  |       |           |
| The Nominative                                |       |           |
| Numbers                                       |       |           |
| Gender Rules                                  |       |           |
| Plural                                        |       |           |
| Irregular Verbs                               |       |           |
| Formal Salutation                             |       |           |
| <b>Unit 3: Speaking &amp; Writing skills</b>  | 8     | CO3       |
| Word Order Of Main Clauses                    |       |           |
| Separable And Inseparable Verbs               |       |           |
| Modal Verbs                                   |       |           |
| Negation                                      |       |           |
| How To Form Questions                         |       |           |
| Conjunctions                                  |       |           |
| The imperative                                |       |           |
| Pronunciation Rules                           |       |           |
| How To Introduce Yourself                     |       |           |



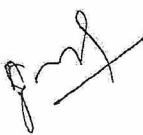
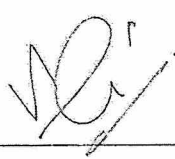
|                                   |   |     |
|-----------------------------------|---|-----|
| Unit4: Soft Skills                | 8 | CO4 |
| How To Make Appointments          |   |     |
| Using Public Transport            |   |     |
| Looking For Apartments            |   |     |
| Asking For / Giving Directions    |   |     |
| How To Say The Time And Date      |   |     |
| Doctor's Visit                    |   |     |
| How To Order Food In A Restaurant |   |     |

Text Books:

1. A course in Technical English, Cambridge, K N Shoba, D Praveen Sam.
2. Practical English Usage, Oxford, Michael Swan,
3. English Language and Communication skills for Engineers, Oxford, Sanjay Kuma /Pushp Lata,
4. Writing that Works, Kenneth Roman and & Joe Raphaelson

Reference Books:

1. Raymond Murphy – English Grammar in Use
2. G. Radhakrishna Pillai & K. Rajeevan – English for Employability
3. Meenakshi Raman & Sangeeta Sharma – Technical Communication: Principles and Practice

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |

# KDK College of Engineering, Nagpur

## B. Tech.

(Ability Enhancement Course AEC-2)

|                                   |                            |                                    |                   |                       |
|-----------------------------------|----------------------------|------------------------------------|-------------------|-----------------------|
| Semester IV                       | Subject Code:<br>4BAE02T-B | Name of Subject: Stress Management |                   |                       |
| Total Hours Distribution per week |                            |                                    |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs         |                                    | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                            |                                    |                   |                       |
| Mid Semester Examination          | Continuous Assessment      | End Semester Examination           | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                   | 25 Marks                           | 50 Marks          | 2 Hours               |

| Course Objectives |                                                                |
|-------------------|----------------------------------------------------------------|
| 1                 | To understand the nature and consequences of stress            |
| 2                 | To understand the impact of stress on work                     |
| 3                 | To recognize the stressors, Adaptive and Maladaptive behaviour |

| Course Outcomes                                           |                                                                                  |
|-----------------------------------------------------------|----------------------------------------------------------------------------------|
| After completion of syllabus, the student will be able to |                                                                                  |
| CO1                                                       | Understand the cognitive variables of stress                                     |
| CO2                                                       | Learn Managing Work-Life Balance                                                 |
| CO3                                                       | Understand role of communication and emotional intelligence, conflict management |
| CO4                                                       | Preparing for better future by reducing the stress using the various techniques  |

| Course Competency |                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|
| 1                 | Analyze cognitive and physiological aspects of stress and its effect on performance |
| 2                 | Develop emotional intelligence and conflict management strategies                   |
| 3                 | Promote well-being through lifestyle modifications and preventive practices.        |



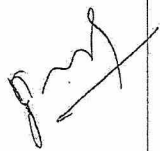
# CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 1   | -   | -   | -   | -   | -   | -   | -   | -   | 1    | 2    |
| CO2                                               | 1   | -   | -   | -   | -   | -   | -   | 1   | -   | 3    | 3    |
| CO3                                               | 1   | -   | -   | -   | -   | -   | 2   | 3   | 3   | 2    | 2    |
| CO4                                               | -   | -   | -   | -   | 2   | -   | -   | -   | -   | 1    | 3    |

| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                        | Hours | Mapped CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit – I</b><br><b>Meaning and nature of stress:</b><br>Difference between eustress and distress; Frustration, conflict and pressure; Meaning of stressors; Sources of stress (i) Psychological, Social, Environmental (ii) Academic, Family and Work stress common stressors at work place: Stressors unique to age and gender, stress Response- ‘Fight or Flight’ Response, Stress warning signals | 8     | CO1       |
| <b>Unit – II</b><br><b>Cognitive appraisal of stress:</b><br>General adaptation to stress; Consequences of stress; Physiological and psychological changes associated with the stress response. Stress and Memory; Stress and Other Cognitive Variables; Stressful environmental conditions on performance.                                                                                             | 7     | CO2       |
| <b>Unit – III</b><br><b>Stress and Work performance:</b><br>Role of communication in managing stress and work performance: Emotional regulation and coping; Emotional intelligence and conflict management: Emotional Basis and Stress; Stress and Conflict in Relationships.                                                                                                                           | 7     | CO3       |
| <b>Unit – IV</b><br><b>Strategies of Stress Management and Preparing for future</b><br>Coping Mechanisms- Coping Mechanisms: Appraisal focused, Emotional focused and Problem focused, Stress warning signals Care of the Self: Nutrition and Other Lifestyle Issues Stress reduction practices: Time management; Exercise; Relaxation techniques; yoga; meditation.                                    | 8     | CO4       |

### Suggested Text Books:

1. Baron, L & Feist, J (2000) Health Psychology 4th edition, USA Brooks/Cole
2. Barlow, Rapee, and Perini (2014), 10 Steps to Mastering Stress: A Lifestyle Approach, USA
3. Clayton, M, (2011). Brilliant stress management How to manage stress in any situation's 1st Edition, Great Britain Pearson Education
4. Cooper, C, & Palmer, S, (2000) Conquer Your Stress, London: Institute of personal Development Universities Press.

|                                                                                   |                                                                                   |                                                                                   |                    |         |                                          |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------|---------|------------------------------------------|
|  |  |  | June<br>2025       | 1.00    | Applicable<br>for AY 2025-<br>26 onwards |
| BoS Chairman                                                                      | Dean (Acad.)                                                                      | Principal                                                                         | Date of<br>release | Version |                                          |



**KDK College of Engineering, Nagpur**  
**B. Tech.**  
 (Ability Enhancement Course AEC-2)

|                                   |                            |                                    |                   |                       |
|-----------------------------------|----------------------------|------------------------------------|-------------------|-----------------------|
| Semester IV                       | Subject Code:<br>4BAE02T-C | Name of Subject: Critical Thinking |                   |                       |
| Total Hours Distribution per week |                            |                                    |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs         |                                    | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                            |                                    |                   |                       |
| Mid Semester Examination          | Continuous Assessment      | End Semester Examination           | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                   | 25 Marks                           | 50 Marks          | 2 Hours               |

| Course Objectives |                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|
| 1                 | Understand and apply fundamental principles of logical reasoning and argumentation. |
| 2                 | Identify, analyze, and evaluate arguments and evidence in engineering contexts.     |
| 3                 | Develop problem-solving strategies using critical thinking methodologies.           |
| 4                 | Apply critical thinking skills to real-world engineering problems and case studies. |

| Course Outcomes                                      |                                                                                               |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| After completion of syllabus, the student is able to |                                                                                               |
| CO1                                                  | Demonstrate the ability to construct and deconstruct arguments effectively.                   |
| CO2                                                  | Apply logical reasoning to identify and solve engineering problems.                           |
| CO3                                                  | Evaluate the credibility of sources and the validity of information in engineering scenarios. |
| CO4                                                  | Make informed decisions by integrating critical thinking with technical knowledge.            |

| Course Competency |                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Understand the core principles of critical thinking, identify elements of reasoning, and recognize logical fallacies and biases in engineering context |
| 2                 | Apply deductive and inductive reasoning techniques and structured problem-solving frameworks to make logical engineering decisions.                    |
| 3                 | Analyze engineering data and reports critically, assess risk and ethical concerns in technical decisions.                                              |
| 4                 | Integrate critical thinking into engineering design, promote collaboration, and adopt reflective practices for continuous improvement.                 |

### CO-PO Articulating Matrix

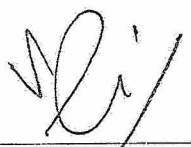
| Programme Outcome |     |     |     |     |     |     |     |     |     |      |      |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1               | -   | -   | -   | -   | -   | -   | 2   | -   | 2   | 2    | 3    |
| CO2               | -   | 2   | -   | -   | -   | -   | -   | -   | -   | 2    | 3    |
| CO3               | -   | -   | 1   | -   | -   | 2   | -   | -   | -   | 2    | 2    |
| CO4               | -   | -   | -   | 2   | -   | 1   | -   | 2   | 3   | 3    | 3    |



| Details of Topic                                                                                                                                                                                                                                                                                              | Hours | Mapped CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit I:</b><br><b>Foundations of Critical Thinking:</b> Introduction to critical thinking and its importance in engineering, Elements of reasoning: purpose, question, information, interpretation, concepts, assumptions, implications, and point of view. Common logical fallacies and cognitive biases. | 8     | CO1       |
| <b>Unit II:</b><br><b>Logical Reasoning and Problem Solving:</b> Deductive and inductive reasoning, Problem-solving frameworks: means-end analysis, root cause analysis, Decision-making models in engineering.                                                                                               | 6     | CO2       |
| <b>Unit III:</b><br><b>Critical Analysis in Engineering Contexts:</b> Evaluating technical reports and data, Assessing risk and uncertainty in engineering decisions, Ethical considerations and their impact on engineering solutions.                                                                       | 6     | CO3       |
| <b>Unit IV:</b><br><b>Application of Critical Thinking in Engineering Projects:</b> Integrating critical thinking in the engineering design process, Collaborative problem-solving and communication, Reflective practices for continuous improvement.                                                        | 8     | CO4       |

#### SUGGESTED TEXT BOOKS:

1. Critical Thinking: A Student's Introduction, Gregory Bassham, William Irwin, Henry Nardone, James Wallace, Publisher: McGraw-Hill Education
2. Thinking Skills: Critical Thinking and Problem Solving by John Butterworth, Geoff Thwaites, Publisher: Cambridge University Press
3. Critical Thinking and Communication: The Use of Reason in Argument by Edward S. Inch, Barbara Warnick, Publisher: Pearson.

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |

**KDK College of Engineering, Nagpur**  
**B.Tech.**  
 (Ability Enhancement Courses AEC-02)

|                                   |                            |                                       |                   |                       |
|-----------------------------------|----------------------------|---------------------------------------|-------------------|-----------------------|
| Semester III/ IV                  | Subject Code:<br>4BAE02T-D | Name of Subject: Employability Skills |                   |                       |
| Total Hours Distribution per week |                            |                                       |                   |                       |
| Total Credit: 2                   | Lecture (L): 2 Hrs         |                                       | Tutorial (T) : -- | Practical (P): --     |
| Examination Scheme                |                            |                                       |                   |                       |
| Mid Semester Examination          | Continuous Assessment      | End Semester Examination              | Total Marks       | Examination Duration: |
| 15 Marks                          | 10 Marks                   | 25 Marks                              | 50 Marks          | 2 Hours               |

| Course Objectives |                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------|
| 1                 | To develop essential soft skills, including teamwork, leadership, and professional communication. |
| 2                 | To enhance problem-solving abilities and aptitude skills relevant to engineering contexts.        |
| 3                 | To improve verbal communication, public speaking, and formal writing skills.                      |
| 4                 | To prepare students for job interviews, resume writing, and other recruitment processes.          |

| Course Outcomes                                      |                                                                                                    |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| After completion of syllabus, the student is able to |                                                                                                    |
| CO1                                                  | Demonstrate effective teamwork and leadership qualities in professional settings.                  |
| CO2                                                  | Apply analytical and logical reasoning skills to solve complex problems.                           |
| CO3                                                  | Communicate proficiently in both verbal and written forms, suitable for professional environments. |
| CO4                                                  | Prepare impactful resumes and perform confidently in interviews.                                   |





| Details of Topic                                                                                                                                                                                                                                                                                                                                                                                                                                        | Hours | Mapped CO |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit I:</b><br><b>Soft Skills Development:</b> Teamwork: Importance, dynamics, and effective collaboration, Leadership: Initiating and managing change, problem-solving, and professional networking, Interview Preparation: Resume writing, digital profiles, video resumes, communication skills, and professional etiquette.                                                                                                                      | 7     | CO1       |
| <b>Unit II:</b><br><b>Aptitude and Problem-Solving Skills:</b> Quantitative Aptitude: Arithmetic, algebra, statistics, sequences, and series, Logical Reasoning: Clocks, calendars, cubes, non-verbal reasoning, and symbol-based reasoning, Data Sufficiency and Analysis: Techniques and practice questions, Time Management: Strategies for efficient problem-solving.                                                                               | 8     | CO2       |
| <b>Unit III:</b><br><b>Verbal Communication and Public Speaking:</b> Vocabulary Enhancement: One-word substitutions and precise diction, Grammar and Sentence Improvement: Understanding and applying grammatical rules, Reasoning Skills: Syllogisms, critical reasoning, and logical sentence ordering, Reading Comprehension: Strategies for tackling advanced passages, Public Speaking: Overcoming glossophobia and effective audience engagement. | 8     | CO3       |
| <b>Unit IV:</b><br><b>Professional Writing and Workplace Communication:</b> Formal Writing: Email etiquette, job application letters, and professional correspondence, Report Writing: Structuring and presenting technical information, Digital Communication: Crafting effective digital profiles and understanding online professional presence, Workplace Etiquette: Understanding and practicing professional behavior and communication.          | 7     | CO4       |

#### SUGGESTED TEXT BOOKS:

- 1) Employability Skills: Brush up Your Engineering by Clive W. Humphris
- 2) Soft Skills Training: A Workbook to Develop Skills for Employment by Frederick H. Wentz
- 3) Employability Skills Manual by Kalamazoo RESA Career & Technical Education.

#### REFERENCE BOOKS:

- 1) Life Skills for Engineers IV - Amrita Vishwa Vidyapeetham Amrita Vishwa Vidyapeetham.

|                                                                                     |                                                                                     |                                                                                     |                 |         |                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------------------------------|
|  |  |  | June 2025       | 1.00    | Applicable for AY 2025-26 onwards |
| BoS Chairman                                                                        | Dean (Acad.)                                                                        | Principal                                                                           | Date of release | Version |                                   |



**KDK College of Engineering, Nagpur**  
**B.Tech.**  
**(Ability Enhancement Course AEC-2)**

|                                   |                             |                                               |                   |                       |
|-----------------------------------|-----------------------------|-----------------------------------------------|-------------------|-----------------------|
| Semester:<br>IV                   | Subject Code:<br>4BAE-01T-E | Name of Subject:<br>Technical English Writing |                   |                       |
| Total Hours Distribution per week |                             |                                               |                   |                       |
| Total Credit: 2                   | Lecture (L): 2Hrs           | Tutorial (T) : --                             | Practical (P): -- |                       |
| Examination Scheme                |                             |                                               |                   |                       |
| Mid Semester Examination          | Continual Assessment        | End Semester Examination                      | Total Marks       | Examination Duration: |
| 15                                | 10                          | 25                                            | 50                | 2                     |

| Course Objectives |                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------|
| 1                 | To enable students to develop foundational grammar proficiency                                 |
| 2                 | To enhance students' reading comprehension, listening skills and Analytical ability            |
| 3                 | To improve students' spoken and written English skill                                          |
| 4                 | To cultivate essential workplace soft skills to enhance overall personality and employability. |

| Course Outcomes                                            |                                                                                                    |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| After completion of syllabus, the students will be able to |                                                                                                    |
| CO1                                                        | apply rules of grammar, sentence structure, and vocabulary effectively.                            |
| CO2                                                        | interpret written texts analytically and demonstrate active listening skills.                      |
| CO3                                                        | express ideas clearly in spoken and written forms.                                                 |
| CO4                                                        | demonstrate professional behavior, conduct formal meetings, deliver effective short presentations. |

| Course Competency |                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------|
| 1                 | Develop grammatical accuracy and vocabulary for effective sentence construction and verbal expression.        |
| 2                 | Improve analytical reading and active listening skills for academic and professional comprehension..          |
| 3                 | Demonstrate effective public speaking and technical writing skills, including group discussions and reports.. |
| 4                 | Apply professional etiquette, self-presentation, and communication techniques in workplace scenarios.         |

## CO-PO Articulating Matrix

| Programme Outcome and Programme Specific Outcomes |     |     |     |     |     |     |     |     |     |      |      |
|---------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO\PO                                             | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
| CO1                                               | 1   | -   | -   | -   | -   | -   | -   | -   | 3   | -    | 3    |
| CO2                                               | 1   | -   | -   | -   | -   | -   | -   | 1   | 3   | -    | 3    |
| CO3                                               | -   | -   | -   | -   | -   | -   | -   | 1   | 3   | -    | 3    |
| CO4                                               | -   | -   | -   | -   | 2   | -   | -   | -   | 3   | -    | 3    |

## SYLLABUS

| Details of Topic                                                                                                             | Hours | Mapped CO |
|------------------------------------------------------------------------------------------------------------------------------|-------|-----------|
| <b>Unit 1: Basic Grammar</b>                                                                                                 | 6     | CO1       |
| Subject -Verb Agreement, Errors in sentences (errors related vocabulary, preposition, pronoun)                               |       |           |
| Transformation of sentence (types of sentences tenses, voice, degree, prepositions, articles, )                              |       |           |
| Word formation, one word substitute                                                                                          |       |           |
| Use of Phrases, Idioms & Proverbs (sentence construction)                                                                    |       |           |
| <b>Unit 2: Reading &amp; Listening skills</b>                                                                                | 8     | CO2       |
| Reading ability, types of reading, importance of reading                                                                     |       |           |
| Reading Analytical comprehensions (Activity based)                                                                           |       |           |
| Introduction to Listening, Types, Importance, Barriers of listening                                                          |       |           |
| Overcoming barriers of Listening, Audio (Creating Podcast & listening)                                                       |       |           |
| <b>Unit 3: Speaking &amp; Writing skills</b>                                                                                 | 8     | CO3       |
| Public Speaking skills, types of speaking., Overcoming stage fear                                                            |       |           |
| Techniques of Group Discussion & Interviews (Activity based)                                                                 |       |           |
| Techniques of written communication (essay & precis.).                                                                       |       |           |
| Features of Technical Writing, Technical Report writing (Accident, Feasibility, Trouble, Progress,) Writing Research papers. |       |           |
| <b>Unit 4: Soft Skills</b>                                                                                                   | 8     | CO4       |
| Business etiquette, grooming, workplace etiquette,                                                                           |       |           |
| Self-assertiveness & Personality development                                                                                 |       |           |
| Meeting & conference: Planning meeting, agenda, minutes, anchoring, report writing                                           |       |           |
| Short presentation (2-3 mins) on any topic. (Activity based)                                                                 |       |           |

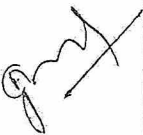
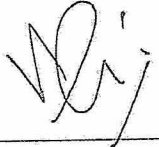


Text Books:

1. A course in Technical English, Cambridge, K N Shoba, D Praveen Sam.
2. Practical English Usage, Oxford, Michael Swan,
3. English Language and Communication skills for Engineers, Oxford, Sanjay Kuma /Pushp Lata,
4. Writing that Works, Kenneth Roman and & Joe Raphaelson

Reference Books:

1. Raymond Murphy – English Grammar in Use
2. G. Radhakrishna Pillai & K. Rajeevan – English for Employability
3. Meenakshi Raman & Sangeeta Sharma – Technical Communication: Principles and Practice

|                                                                                    |                                                                                    |                                                                                    |                    |         |                                            |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------|---------|--------------------------------------------|
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| BoS<br>Chairman                                                                    | Dean (Acad.)                                                                       | Principal                                                                          | Date of<br>release | Version |                                            |