

| No | Course Information | |
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| 1 | Unit name: | Engineering Circuit Analysis I |
| 2 | Code: | EP 21011 |
| 3 | Classification: | Engineering subject |
| 4 | Credit value: | 2.5 |
| 5 | Semester/ Year Offered: | 1/2 |
| 6 | Pre-requisite: | Principle of Electrical Engineering |
| 7 | Mode of delivery: | Lecture, Practical |
| 8 | Assessment system and breakdown of marks: | |
| 9 | Test | 20% |
| 10 | Mid-term/ final Examination | 30% |
| 11 | Academic staff teaching unit: | |
| 12 | <p>Course outcome of unit:</p> <p>In this course students will be able</p> <ul style="list-style-type: none"> • To recall the concepts and parameters associated with the DC circuits • To explain the theory of Kirchhoff's law, Thevenin's and Norton in the DC circuit • To compute the value of current and voltage associated with the circuit • To build the simple DC circuit | |
| 13 | <p>Synopsis of unit:</p> <p>The course covers the fundamental of engineering circuit analysis. This course is designed to provide the electrical engineering students with an understanding of the basic concepts of the profession. Topics covered include introduction to theory, analysis and design of electrical circuits. Units and scales, voltage, current, power, Ohm's law, Kirchhoff's law(voltage and current), superposition, Thevenin's , Norton, Node, Mesh, Delta-Wye.</p> | |

Topic:

Chapter

Title

1. Basic Components and Electric Circuit

- Units and Scales
- Charge, Current, Voltage, and Power
- Voltage and Current Sources
- Ohm's Law

2. Voltage and Current Laws

- Nodes, Paths, Loops, and Branches
- Kirchhoff 's Current Law
- Kirchhoff 's Voltage Law
- The Single- Loop Circuit
- The Single- Node-Pair Circuit
- Series and Parallel Connected Sources
- Resistors in Series and Parallel
- Voltage and Current Division

3. Basic Nodal and Mesh Analysis

- Nodal Analysis
- The Supernode
- Mesh Analysis
- The Supermesh
- Nodal vs. Mesh Analysis: A Comparison

4. Handy Circuit Analysis Techniques

- Linearity and Superposition
- Source Transformations

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| | <p>-Thevenin and Norton Equivalent Circuits</p> <p>-Maximum Power Transfer</p> <p>-Delta-Wye Conversion</p> |
| 15 | <p>Main references:</p> <p>Engineering Circuit Analysis, 8th Edition, William H.Hayt,Jr</p> |
| 16 | <p>Additional references:</p> <p>1. Fundamentals of Electric Circuits, 2nd Edition, Charles K. Alexander and Matthew N.O. Sadiku, 4th Edition, McGraw-Hill, 2009</p> <p>2. Irwin, J.D. and R.M. Nelms, 2011. Basic Engineering Circuit Analysis, Tenth Edition, Wiley.</p> |

Information on Lab Practical

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| 1 | <p>LED Series/Parallel</p> <p>Objective:</p> <p>Upon the completion of this activity, the student must be able</p> <ul style="list-style-type: none">- To connect the LED in series and parallel- To apply the KVL & KCL theory <p>Requirement Materials</p> <ul style="list-style-type: none">➤ LED➤ Battery➤ Project board➤ Wire➤ Multi-meter |
| 2 | <p>Installation of wooden Block</p> <p>Objective:</p> <p>Upon the completion of this activity, the student must be able</p> <ul style="list-style-type: none">-To installation the wooden block <p>Requirement Materials</p> <ul style="list-style-type: none">➤ Board➤ Socket➤ Switch➤ Wire➤ Plug holder➤ Drill |
| 3 | <p>Trucking Amputate (45° & 90°)</p> <p>Objective</p> <p>Upon the completion of this activity, the student must be able</p> <ul style="list-style-type: none">-To amputate of trucking <p>Requirement Materials</p> <ul style="list-style-type: none">➤ Trucking➤ Try Square |