

EXPERIENTIAL ENGINEERING EDUCATION (ExEEed) – RESEARCH BASED LEARNING

| VI Semester: Common for all branches | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------------------------|---|-------------------------------|---------|---------------|--------------------------|-------|------|--|-------|------|--|---------|------|--|-------|------|--|-------|------|--|----------|------|---|--------|
| Course Code | Category | Hours / Week | | | Credits | Maximum Marks | | | | | | | | | | | | | | | | | | | | |
| ACSC27 | Foundation | L | T | P | C | CIA | SEE | Total | | | | | | | | | | | | | | | | | | |
| | | 2 | - | - | 1 | 30 | 70 | 100 | | | | | | | | | | | | | | | | | | |
| Contact Classes: 36 | | Tutorial Classes: Nil | | Practical Classes: Nil | | | Total Classes: 36 | | | | | | | | | | | | | | | | | | | |
| Prerequisite: There are no prerequisites to take this course | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>I. COURSE OVERVIEW: Research-based learning (RBL) presents as an alternative learning model that can develop the critical thinking skills. The research-based learning is conducted under constructivism which covers four aspects: learning which constructs student's understanding, learning through developing prior knowledge, learning which involves social interaction process, and meaningful learning which is achieved through real-world experience. The major focus is to engage students in the inquiry process where they formulate questions, conduct investigations, apply information and media to learning, and generate products that illustrate learning. The 5E learning cycle adopted for RBL leads students through five phases: Engage, Explore, Explain, Elaborate, and Evaluate which results in greater benefits concerning student's ability for scientific inquiry.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>II. COURSE OBJECTIVES: The students will try to learn:</p> <ol style="list-style-type: none"> I. The opportunities to engage in solving the real-world problems. II. The overall process of research from its inception to the report. III. The creation of the environment for multi-disciplinary research. IV. The role of ethics in research. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>III. COURSE OUTCOMES: After successful completion of the course, students should be able to:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">CO 1</td> <td style="width: 70%;">Develop knowledge and skills from various areas through substantial research-based project to select a research topic.</td> <td style="width: 20%; text-align: right;">Apply</td> </tr> <tr> <td>CO 2</td> <td>Examine the collected evidences to make quantitative, qualitative and statistical analysis for finding the research problem.</td> <td style="text-align: right;">Analyze</td> </tr> <tr> <td>CO 3</td> <td>Identify unstructured problems that need research as an individual or as a member/leader in diverse teams to discern which information is reliable and which is not.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 4</td> <td>Make use of modern tools to get the desired solution for the research problem found.</td> <td style="text-align: right;">Apply</td> </tr> <tr> <td>CO 5</td> <td>Assess the outputs achieved by making judgments about information and validity of ideas for confirming the quality of work based on a set of criteria.</td> <td style="text-align: right;">Evaluate</td> </tr> <tr> <td>CO 6</td> <td>Build a prototype to test and analyze the product designed and prepare document for an application.</td> <td style="text-align: right;">Create</td> </tr> </table> | | | | | | | | | CO 1 | Develop knowledge and skills from various areas through substantial research-based project to select a research topic. | Apply | CO 2 | Examine the collected evidences to make quantitative, qualitative and statistical analysis for finding the research problem. | Analyze | CO 3 | Identify unstructured problems that need research as an individual or as a member/leader in diverse teams to discern which information is reliable and which is not. | Apply | CO 4 | Make use of modern tools to get the desired solution for the research problem found. | Apply | CO 5 | Assess the outputs achieved by making judgments about information and validity of ideas for confirming the quality of work based on a set of criteria. | Evaluate | CO 6 | Build a prototype to test and analyze the product designed and prepare document for an application. | Create |
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| <p>IV. COURSE SYLLABUS</p> <ol style="list-style-type: none"> V. What is Research? VI. Identifying Problem Statement VII. Overview of research-literature VIII. Planning activities, clarifying methods/methodologies IX. Experimentation X. Hypothesis testing XI. Undertaking investigation and analyzing the data XII. Interpretation and consideration of results XIII. Presentation of replication studies | | | | | | | | | | | | | | | | | | | | | | | | | | |