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|  | **Bangladesh Army University of Engineering & Technology**  Qadirabad Cantonment, Natore-6430  Faculty of Electrical and Computer Engineering  **Department of Electrical and Electronic Engineering** |

Course Plan

**EEE 4000: Project/Thesis**

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| **Program:** | B.Sc. in Electrical and Electronic Engineering (EEE) |
| **Course Code & Title:** | EEE-4000 Thesis Project |
| **Semester:** | Fall 2023 |
| **Year:** | 4th |
| **Credit Hour:** | 6.00 Hr (3.00 in each semester) |
| **Course Duration** | 1 Year (2 semesters) |
| **Rationale:** | To integrate the different design components covered in different fundamental courses. Engineering education facilitates a developmental journey that learners take in order to prepare themselves for a professional career. This course aims to equip students well enough to undertake real life design problems in their 4th year of study. |
| **Pre-requisite (if any):** | None |

1. **Course Details**

Students may choose to work alone or in groups of up to 2/3 students in project or thesis as the decision taken by supervisor/department. Students can choose topics containing theoretical, empirical and/or practical aspects. But irrespective of the topic chosen, the use of relevant theory and literature is fundamental to the thesis. An empirical paper: The idea is to gather knowledge on a specific topic and to relate theory to empirical observations, e.g. by using existing data, by using questionnaires or experiments. A case study: A case study approach involves an analysis of a specific occurrence or process in an actual company or another type of organization. The purpose of a case study is to provide descriptions, analyses and suggested solutions to problems in relation to the case in hand. Case studies will involve the use of quantitative and/or qualitative methods for data collection. A theoretical paper: This type of thesis builds on a theoretical model or a generic problem. Often a theoretical thesis is based on existing literature studies in which a theoretical problem is analyzed. This type of thesis is the least common. No type of thesis is superior to others and no topics guarantee a high grade. The grade is based solely on whether the topic is thoroughly analyzed, the results clearly presented and whether you are able to demonstrate your knowledge of current theories and analyses, competent application of methods as well as independent critical judgment.

1. **Statement of Course Outcome and Mapping**

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| CO No | CO Statement | PO | BL | K | P | A | Delivery  M & A | Assessment Tools |
| CO1 | **Research literature** and critically analyses the existing solution methods using specialized engineering knowledge. | PO2 | C4 | K4 | - | - | Demonstration  Tutorial  Group work | Proposal |
| CO2 | **Develop probable solutions** of complex engineering problem that meet specified needs with appropriate consideration for public health and safety, culture, societal and environmental considerations. | PO3 | C6 | K5 | P1 P3  P4  P7 | - | Demonstration  Tutorial  Group work | Report (Final Design & Result) |
| CO3 | **Conduct investigations** of complex problems (using research-based knowledge (K8) and research methods) to provide valid conclusions. | PO4 | C4 | K8 | P2 |  | Demonstration  Tutorial  Group work | Report  (Literature review & Methodology) |
| CO4 | **Use modern tools** for prediction and modeling of complex engineering problems considering the practice in electrical and electronic engineering. | PO5 | P4 | K6 | P1 |  | Demonstration  Tutorial  Group work | Report (Use of modern tools) |
| CO5 | **Apply reasoning to** assess societal, health, safety, legal and cultural issues relevant to professional engineering practice and solutions to complex engineering problems. | PO6 | A3 |  | P1  P5 |  | Demonstration  Tutorial  Group work | Report  (Discussion & Conclusion) |
| CO6 | **Evaluate sustainability** of solution of complex engineering problems considering society and environment issues. | PO7 | C5 | K7 | P1  P2  P6 |  | Demonstration  Tutorial  Group work | Report (Discussion & Conclusion) |
| CO7 | **Demonstrates professional ethics** and norms of engineering practices. | PO8 | A5 |  |  |  | Demonstration  Tutorial  Group work | Report  (Checking Plagiarism & originality) |
| CO8 | **Displays** good interpersonal skills as a member/leader of a team. | PO9 | A2 |  |  |  | Demonstration  Tutorial  Group work | Progress Presentation/Viva |
| CO9 | **Perform effective oral presentation** on complex engineering activities showing some definite involvement or commitment. | PO10 | A2 |  |  | A2  A4 | Demonstration  Tutorial  Group work | Final Defense  (Oral Presentation) |
| CO10 | **Demonstrate** competency in completing individual research/project based on relevant management principles and economic model. | PO11 | A5 |  |  |  | Demonstration  Tutorial  Group work | Report  (Millstone Evaluation) |
| CO11 | **Develop** the feeling to engage in independent learning of new things for better future. | PO12 | A4 |  |  |  | Demonstration  Tutorial  Group work | Report |

1. **Mapping of Course Outcomes (CO) and Program Outcomes (PO) with Level:**

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| Course Outcomes  (CO) | Program Outcome (PO) | | | | | | | | | | | |
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 |  | M |  |  |  |  |  |  |  |  |  |  |
| CO2 |  |  | H |  |  |  |  |  |  |  |  |  |
| CO3 |  |  |  | H |  |  |  |  |  |  |  |  |
| CO4 |  |  |  |  | M |  |  |  |  |  |  |  |
| CO5 |  |  |  |  |  | M |  |  |  |  |  |  |
| CO6 |  |  |  |  |  |  | H |  |  |  |  |  |
| CO7 |  |  |  |  |  |  |  | L |  |  |  |  |
| CO8 |  |  |  |  |  |  |  |  | L |  |  |  |
| CO9 |  |  |  |  |  |  |  |  |  | M |  |  |
| CO10 |  |  |  |  |  |  |  |  |  |  | L |  |
| CO11 |  |  |  |  |  |  |  |  |  |  |  | M |

High (H)=3, Medium (M)=2 and Low (L)=1

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| Program Outcomes  (PO) | | | | | | | | | | | | Knowledge Profile  (KP/K) | | | | | | | | Complex Engineering Problem (CEP/P) | | | | | | | Engineering Activities (EA/A) | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | K1 | K2 | K3 | K4 | K5 | K6 | K7 | K8 | P1 | P2 | P3 | P4 | P5 | P6 | P7 | A1 | A2 | A3 | A4 | A5 |
|  | C5 | C4 | C4 | P4 | A3 | C5 | A5 | A2 | A2 | A5 | A4 |  |  |  | X | X | X | X | X | X | X | X | X | X | X | X |  | X |  | X |  |

1. **Assessment Strategy:**

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| Si | Assessment Tools | Marks | Remarks |
| 1 | Proposal | **10** | **Week-2 of semester 1** |
| 2 | Progress Presentation/Report | 15 | Week-13/14 of semester-1 |
| 3 | Report Writing | 55 | Week-14 of semester 2 |
| 4 | Final Defense | 20 | Week-1 after semester final exam of sem-2 |

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| Tools | CO | PO | Assessment Tools | Percentage (100%) |
| Proposal | CO1 | PO2 | Literature Review -4,  Problem Statement-3,  Objectives-3 | 10 |
| Progress PPT/Report | CO8 | PO9 | Interpersonal skill to work individually or in a team | 15 |
| Report Writing | CO2 | PO3 | Report (Final Desing and Outcome) | 25 |
| CO3 | PO4 | Report (Literature Review & Methodology) | 5 |
| CO4 | PO5 | Report (Use of modern tools) | 5 |
| CO5 | PO6 | Report (Discussion and Conclusion) | 5 |
| CO6 | PO7 |
| CO7 | PO8 | Report (Checking Plagiarism & Originality) | 5 |
| CO10 | PO11 | Report (Evaluation of milestone) | 5 |
| CO11 | PO12 | Report (Overall reflection on lifelong learning) | 5 |
| Final Defense | CO9 | PO10 | Final Defense (Oral Presentation) | 20 |
| Total | | | | 100 |

1. **Marking Rubric:**

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| **Prepared by:** |  | **Approved by: (Head of the Dept.)** |