PART A

•	Course No/Course Code	BAE 2101
•	Course Title	Computer Aided Design and Drafting
•	Course Type	Core Course
•	Year/Level/Semester/Term	Second year (4th Semester)
•	Academic Session	Spring 2024-25
•	Course Teachers/Instructors	Dr. Monon Mahboob, Dr.Md.Mahadi Hasan, Raja Rashidul Hasan, Tahseen Asma Meem, Susmita Tropa Barai, Farzana Momtaz Mithila, Dr. Mohammad Tauhiduzzaman, Ahnaf Tahmid.
•	Pre-requisite (If any)	EEE 1201: Electrical Circuits 1 (DC)
•	Credit Value	1 credit hour
•	Contact Hours	3 hours of laboratory per week
•	Total Marks	100
•	Mission of EEE Department	• Educate young leaders for academia, industry, entrepreneurship, and public and private organization through theory and practical knowledge to solve engineering problems individually and in teams. • Create knowledge through innovative research and collaboration with multiple disciplines and societies. • Serve the communities at national, regional, and global levels with ethical and professional responsibilities.
•	Vision of EEE Department	To become a front runner in preparing Electrical and Electronics Engineering graduates to be nationally and globally competitive and thereby contribute value for the knowledge-based economy and welfare for the people of the world.
•	Rationale of the Course (Course Description)	This course provides practical understanding of the fundamentals of CAD software, command for draw, erase, move, rotate, mirror, hatch, trim, planes, parallelism and perpendicularity, surfaces, inter-sections and development, basic operations such as drawing of lines, circles, rectangles, arc, blocks etc.
•	Course Objectives	The course is designed to provide students with: • Introduction to Computer Aided Design & Drafting and its prospects and applications in

engineering drawing using different application packages.
- Familiarization with isometric and orthographic projection in engineering drawing.
- Familiarization with AutoCAD software and its different features, tools and commands.
- Draw isometric and orthographic projection using AutoCAD software.
- Draw electrical circuits using AutoCAD software.
- Understanding and drawing Civil Plan using AutoCAD software.
- Understanding and drawing the proper electric fittings and fixture distribution based on Civil planning.
- Familiarization with electric conduit layout diagram.
- Application of BNBC-1993

15. Course Outcomes (CO)/Course Learning Outcomes (CLOs):

By the end of this course, students should be able to –

COs/CLOs	Details	K	P	A	Assessed Program Outcome Indicator	BNQF Indicator	Assessment Techniques
1	**Identify** the different views based on projection criteria in engineering drawing using Auto CAD tools.	3	1 2 6		P.a.3.C3	FS.1	Mid-term exam, Lab Task Performance
2	**Design and develop** the drawing of different electrical circuits using Auto CAD tools.	6	1 4 5		P.e.1.C6	FS.6	Mid Assignment
3	**Design and draw** a civil plan and electrical fittings layout by using AUTOCAD software and appropriate BNBC.	6	1 4 5		P.e.1.C6	FS.6	**OEL Report** and OEL viva
4	**Solution** of electrical conduit layout on civil plan with proper electric fittings using AUTOCAD and calculate the electrical loads applying BNBC.	6	1 4 5		P.e.1.C6	FS.6	Lab Performance

16. Mapping with Course Learning Outcomes (CLOs) with Program Learning Outcomes (PLOs)

CLOs	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11	PLO 12

1	FS.1											
2					FS.6							
3					FS.6							
4					FS.6							

PART B

17. Course plan:

By the end of this course, students should be able to –

Time Frame (Week)	Topics	Teaching Learning Strategy	Assessment Strategy	Corresponding COs /CLOs	Evidence
Week 1	Mission & Vision of AIUB, Dept. of EEE; OBE Assessment, Objective of Computer Aided Design & Drafting. Introduction to Engineering Drawing and Computer Aided Design & Drafting and Familiarization with AutoCAD software and its different features. Familiarization with different toolbars and command of AutoCAD software.	Lecture Tutorial	Class Performance	1	**Lab Task**
Week 2	Basic operations such as drawing of lines, circles, rectangles, arc etc.	Lecture Tutorial		1	**Lab Task**
Week 3	Familiarization with different orthographic projections and drawing using AutoCAD software.	Lecture Tutorial		1	**Lab Task**
Week 4	Familiarization with different isometric	Lecture Tutorial		1	

	projections and drawing using AutoCAD software				
Week 5	Introducing with Electrical Symbols used for Electrical Circuit Design and drawing some Electrical Circuits using AutoCAD.	Lecture Tutorial		1	
Week 6	**MIDTERM EXAM [LAB QUIZ WRITTEN (NO MCQ QUESTIONS)]**				
Week 7	**MID-TERM EXAM WEEK FOR THE THEORY COURSES**				
Week 8	Understanding and drawing a Civil Plan using AutoCAD software. PART ONE. Understanding and drawing a Civil Plan using AutoCAD software. PART TWO	Lecture Tutorial		3	
Week 9	Drawing the proper electric Fittings and Fixture Layout based on a Civil plan using AutoCAD software and understanding BNBC Understanding and drawing the proper Electric Conduit Layout based on Civil planning using AutoCAD software.	Lecture Tutorial	**Class Performance**	3	**Lab Task**
Week 10	Understanding and drawing the connection diagram of Switchboard (SB), Sub Distribution Board (SDB), and Main Distribution Board (MDB) based on Civil planning using AutoCAD software.	Lecture Tutorial		3	**Lab Task**

Week 11	Lab performance				3	**Related docs**
Week 12	OEL EXPERIMENT VIVA VOCE					
Week 13	FINAL-TERM EXAM WEEK FOR THEORY COURSES					

* The faculty reserves the right to change, amend, add or delete any of the contents.

PART C

18. Assessment and Evaluation

- **Assessment Strategy:**

	CO/CLO 1 (marks)	CO/CLO 2 (marks)	CO/CLO 3 (marks)	CO/CLO 4 (marks)	Marks for Grading
Attendance					10
Lab Performance (Mid)	30				
Assignment (Mid)		40			
Written Exam (Midterm)					20
Attendance					10
Lab Performance (Final)				40	
OEL (Final)			30		
Viva Exam (Final)			20		

Marking system for Midterm		Marking system for Final term	
Attendance & Lecture Response	10%	Attendance & Lecture Response	10%
Lab Performance (Individual)	30%	Lab Performance (Individual)	40%
Assignment (Non-OBE assignment)	40%	OEL Performance (OBE Assessment)	30%
Midterm Exam (Written Lab Quiz)	20%	Viva Voce of the OEL Performance	20%
Total	100%	Total	100%
Final Grade/ Grand Total			
Midterm:	40%		
Final Term:	60%		

- **Table of Specification (TOS)**

Mid-Term Exam

					Level of Bloom's Taxonomy						
Topic	C	N	N	N	Remember	Understand	Apply	Analyze	Evaluate	Create	P

s	O No.	o. of Days	o. of Items	o. of COs	Item No.	Test Type	Marks	Item No.	Test Type	Marks	Item No.	Test Type	Marks	Item No.	Test Type	Marks	Item No.	Test Type	Marks	Item No.	Test Type	Marks	OI
Introduction to engineering drawing	CO1	1	1								1	SQ	20										P.a.3.C3
Orthographic & Isometric views	CO1	3	2																				P.a.3.C3
Circuits drawing	CO2	1	1																				P.a.3.C3
Total		12	4										20										

- **Marks Distribution:**

  The evaluation system will be strictly followed as par the AIUB grading policy. The following grading system will be strictly followed in this class.

Assessment Type	Marking system For Theory Classes (Midterm and Final term)	
Continuous	Attendance	10%
Continuous	Performance	30%
Continuous	Assignment/OEL	40%
Summative	Midterm Written Exam/ Final Viva Exam	20%
	Total	100%
	Final Grade/ Grand Total	
Grand Total	Midterm:	40%
	Final Term:	60%

- **Grading Policy**

Letter	Grade Point	Numerical %
A+	4.00	90-100
A	3.75	85-<90

B+	3.50	80-<85
B	3.25	75-<80
C+	3.00	70-<75
C	2.75	65-<70
D+	2.50	60-<65
D	2.25	50-<60
F	0.00	<50(Failed)

- **Makeup Procedure:**

Students who fail to maintain the requirements and deadlines needed to contact faculty with reasoning. Continuous assessments will be taken with agreement with the student and faculty. For the make up of Summative assessments students need to apply for SET – B exam according to the AIUB policy.

PART D

19. Learning Materials

Formal lectures will provide the theoretical base for the subject as well as covering its practical application.
A set of lecture notes, tutorial examples, with subsequent discussion and explanation, together with suggested reading will support and direct the students in their own personal study.

Maximum topics will be covered from the Lab manuals. White board will be used for most of the time to give brief description about the drawings.

Multimedia projector will be used to show the software work, for the convenience of the students.

Students must study up to the last experiments before coming to the class and it is suggested that they should go through the relevant notes before coming to the class. Just being present in the class is not enough- students must participate in classroom discussions.

Few assignments will be given to the students based on that class to test their class performance.
- **Recommended Readings (Textbook);**

  - "AutoCAD 2004, 2D Training Manual" by Kristen S. Kurland

- **Supplementary Readings (Reference Book);**

- "Beginning AutoCAD 2004" by Bob McFarlane
- "AutoCAD 2007 For Dummies" by David Byrnes and Mark Middlebrook.

PART E

Verification: **BAE 2101: Computer Aided Design and Drafting**		
Prepared by: ………………………………….. Tahseen Asma Meem (Course Co-ordinator) Date: ……………………………	Checked and certified by: .... Nafiz Ahmed Chisty Head (UG), Department of EEE, Faculty of Engineering Date:	Approved by: .... Prof. Dr. A B M Siddique Hossain Dean, Faculty of Engineering Date: ....
	Moderated by: ……………………. Date: ………………………….	Moderated by: ………………………. Date: ………………………….

Appendix A

Table 1: Knowledge Profile (according to BAETE Manual 2nd Edition)

Attribute		
K1	A systematic, theory-based understanding of the natural sciences applicable to the discipline	
K2	Conceptually based mathematics, numerical analysis, statistics and the formal aspects of computer and information science to support analysis and modeling applicable to the discipline	
K3	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline	
K4	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline	
K5	Knowledge that supports engineering design in a practice area	
K6	Knowledge of engineering practice (technology) in the practice areas in the	

		engineering discipline
K7		Comprehension of the role of engineering in society and identified issues in engineering practice in the discipline: ethics and the engineer's professional responsibility to public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability
K8		Engagement with selected knowledge in the research literature of the discipline

Table 2: Range of Complex Engineering Problem Solving (according to BAETE Manual 2nd Edition)

Attribute	**Complex Engineering Problems** have characteristic P1 and some or all of P2 to P7:
Depth of knowledge required	P1: Cannot be resolved without in-depth engineering knowledge at the level of one or more of K3, K4, K5, K6 or K8 which allows a fundamentals-based, first principles analytical approach
Range of conflicting requirements	P2: Involve wide-ranging or conflicting technical, engineering and other issues
Depth of analysis required	P3: Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
Familiarity of issues	P4: Involve infrequently encountered issues
Extent of applicable codes	P5: Are outside problems encompassed by standards and codes of practice for professional engineering
Extent of stakeholder involvement and conflicting requirements	P6: Involve diverse groups of stakeholders with widely varying needs
Interdependence	P7: Are high level problems including many component parts or sub-problems

Table 3: Range of Complex Engineering Activities (according to BAETE Manual 2nd Edition)

Attribute	**Complex activities** means (engineering) activities or projects that have some or all of the following characteristics:
Range of resources	A1: Involve the use of diverse resources (and for this purpose resources include people, money, equipment, materials, information and technologies)
Level of interaction	A2: Require resolution of significant problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues
Innovation	A3: Involve creative use of engineering principles and research

	based knowledge in novel ways
Consequences for society and the environment	A4: Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation
Familiarity	A5: Can extend beyond previous experiences by applying principles-based approaches

Table 4: Learning Outcome Domains and Level Descriptors (as per BNQF)

Learning Outcome Domains
Fundamental Skills (FS): FS.1: demonstrate knowledge and critical understanding of the well-established principles of his/her field of study, and of the way in which those principles have developed; FS.2: apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context; FS.3: apply knowledge and skills in addressing issues/solving problems with minimal supervision; FS.4: evaluate critically the appropriateness of different approaches to solving problems in his/her field of study; FS.5: support supervision of junior staff via a mentor or a leader/manager; and FS6: display advanced digital literacy which is adequate to perform complex tasks and bring about solutions.
Social Skills (SS): SS.1: communicate and interact effectively and clearly, ideas, information, problems and solutions as a team to peers, experts and non-experts in Bangla and English; SS.2: express her/himself fluently and spontaneously in English and Bangla; SS.3: use language flexibly and effectively for social, academic and professional purposes; SS.4: produce clear, well structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices in advanced proficiency level of Bangla and English; SS.5: demonstrate the ability to incorporate entrepreneurial skills in planning daily activities; and SS.6: display advanced civic literacy and knowledge, exercising civic rights and obligations at all levels as well as participating in changes for the improvement of Bangladesh society.
Thinking Skills (TS): TS.1: exercise very substantial degree of autonomy and often significant responsibility in making judgments/ decisions towards the management of self, others and for the allocation of substantial resources; and TS.2: demonstrate professional knowledge and practical skills in both technical and management to lead a team in inexperienced environment.
Personal Skills (PS): PS.1: engage in self-direction and self-enterprise skills; PS.2: demonstrate social, professional, environmental and ethical practice/ values; PS.3: show-case global knowledge and competencies to fulfil employment, entrepreneurial and lifelong learning skills; and PS.4: contribute significantly to the society.

Detail Program Outcomes

PO-a/PLO 1: Engineering Knowledge

Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in K1 to K4 respectively to the solution of complex engineering problems.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.a.1.C3	N/A	Apply information and concepts in *natural science* with the familiarity of issues.	Cognitive Level 3 (Applying)	0.1	EEE1203: Electrical Circuits – 1 (DC)	EEE3213: Electrical Properties of Material	K1			Assignment
P.a.2.C3	N/A	Apply information and concepts of *mathematics* with the familiarity of issues.	Cognitive Level 3 (Applying)	0.1	EEE2209: Analog Electronics	EEE2213: Signals and Linear Systems	K2			Assignment
P.a.3.C3	FS.1	Apply information and concepts in *engineering fundamentals* to solve complex engineering problems with a range of conflicting requirements.	Cognitive Level 3 (Applying)	0.4	EEE2105: Electrical Machines 1	EEE3101: Digital Logic and Circuits	K3	P1, P2, P6		Assignment
P.a.4.C3	N/A	Apply information and concepts in *specialized engineering sciences* with the in-depth of analysis of a complex engineering problem.	Cognitive Level 3 (Applying)	0.4	EEE3105: Industrial Electronics and Drives	EEE4101: Modern Control Systems	K4	P1, P3, P7		Assignment

PO-b/PLO 2: Problem Analysis

Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (K1 to K4).

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.b.1.C4	N/A	Identify first principles of natural sciences and engineering sciences in practical	Cognitive Level 4 (Analyze)	0.1	EEE2101: Electrical Circuits 2 (AC)	EEE2103: Electronic Devices	K1			Assignment

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
		applications.								
P.b.2.C4	N/A	Formulate solutions, procedures, and methods using first principles of mathematics for engineering sciences.	Cognitive Level 4 (Analyzing)	0.1	EEE3101: Digital Signal Processing	EEE3107: Electromagnetics Fields and Waves	K2			Assignment
P.b.3.C4	FS.3	Analyze solutions for complex engineering problem reaching substantiated conclusion.	Cognitive Level 4 (Analyze)	0.4	EEE3211: Power Systems Analysis	EEE2207: Electrical Machines 2	K3	P1, P3, P7		Assignment
P.b.4.C4	N/A	Research literature and analyze the validity and accuracy of existing solution for complex engineering problems.	Cognitive Level 4 (Analysis)	0.4	EEE2208: Electrical Machines 2 Lab	EEE4209: Telecommunications Engineering	K4	P1, P2, P6		Case Study

PO-c/ PLO 3: Design/ development of solutions

Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (K5).

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.c.1.C4	N/A	Design solutions for components of an engineering problem considering public health and safety.	Cognitive Level 4 (Analyzing)	0.2	BAE1201: Basic Mechanical Engineering	EEE2211: Electrical Power Transmission & Distribution	K5			Assignment
P.c.2.C6	N/A	Develop process for complex engineering problems considering cultural and societal factors.	Cognitive Level 6 (Create)	0.4	EEE4000: Capstone Project	EEE2102: Electrical Circuits 2 (AC) Lab	K5	P1, P3, P7		Report
P.c.3.C5	N/A	Evaluate solutions that meet	Cognitive Level 5 (Evaluate)	0.4	EEE4211: Measurement and	EEE4213: Power Stations	K5	P1, P2		Assignment

		specified needs with appropriate environmental considerations.			Instrumentation	and Substations		, P6		

PO-d/ PLO 4: Investigation

Conduct investigations of complex problems using research-based knowledge (K8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.d.1 .C5	N/A	Investigate the design of experiments for complex engineering problem through appropriate research.	Cognitive Level 5 (Evaluating)	0.4	EEE4103: Microprocessor and Embedded System	EEE3215: Principles of Communication Lab	K8	P1, P3, P7		OEL lab/Project/Assignment
P.d.2 .C4	N/A	Analysis and Interpretation of collected data to provide valid conclusion acknowledging the limitations.	Cognitive Level 4 (Analyzing)	0.2	EEE2104: Electronic Devices Lab	EEE3102: Digital Logic and Circuits Lab	K8			OEL
P.d.3 .C5	FS.2	Investigate solution of complex engineering problem by synthesis of information to provide valid conclusions.	Cognitive Level 5 (Evaluating)	0.4	EEE2106: Electrical Machines 1 Lab	EEE4102: Modern Control Systems Lab	K8	P1, P4, P5		Project/OEL

PO-e/PLO 5: Modern Tool Usage

Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (K6).

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.e.1.C6	N/A	Select engineerin	Cognitive Level 6	0.4	BAE2101: Computer	EEE2210: Analog	K6	P1,		OEL/project

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
		g tools and Apply appropriate techniques to solve complex engineering problems considering the limitations.	(Create)		Aided Design and Drafting	Electronics Lab		P4, P5		
P.e.2.P4	N/A	Use tools for prediction and modeling of complex engineering problems considering the practice in electrical and electronic engineering discipline.	Psychomotor Level 4 (Articulation)	0.3	EEE4217: VLSI Circuit Design Lab	EEE4208: Electrical Services Design Lab		P1, P4, P5		OEL/project
P.e.3.P5	FS.6	Create relevant resources for complex engineering problems using modern engineering tools.	Psychomotor Level 5 (Naturalization)	0.3	EEE3101: Digital Signal Processing	EEE4217: VLSI Circuit Design Lab		P1, P3, P7		OEL/project

PO-f/ PLO 6: The Engineer and Society

Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (K7)

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.f.1.A3	PS.4	Accepts and Recognize the role of engineering in society, health, safety, legal and culture.	Affective Level 3 (Valuing)	0.3	EEE4208: Electrical Services Design Lab	BAE1201: Basic Mechanical Engineering				Project/Assignment
P.f.2.C6	FS.4	Design solution for complex engineering problem in	Cognitive Level 6 (Create)	0.7	EEE2215: Engineering Ethics and Environmental Protection	EEE4000: Capstone Project	K7	P1, P3, P7		Assignment/Report

		accordance with professional practices								

PO-g/PLO 7: Environment and Sustainability

Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (K7)

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.g.1.C5	N/A	Evaluate sustainability of complex engineering problems considering society and environment.	Cognitive Level 5 (Evaluating)	1.0	EEE4213: Power Stations and Substations	EEE4000: Capstone Project	K7	P1, P2, P6		Report

PO-h/ PLO 8: Ethics

Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (K7)

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.h.1. C3	PS. 2	Apply professional codes of ethics and standards considering public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability.	Cognitive Level 3 (Applying)	0.3	EEE2215: Engineering Ethics and Environmental Protection	EEE4000: Capstone Project	K7			Presentation/Report
P.h.2. A4	SS. 6	Demonstrates individual responsibilities based on norms of engineering practice.	Affective Level 4 (Organization)	0.7	EEE4001: Internship/ Seminar/ Workshop	EEE4000: Capstone Project				Report/Book

PO-i/ PLO 9: Individual Work and Teamwork

Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.i.1.A 3	N/A	Function as effective team	Affective Level 3 (Valuing)	0.5	EEE4000: Capstone Project	EEE4001: Internship/ Seminar/				Peer Review Survey with rubrics and

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
		member in multi-disciplinary problems.				Workshop				supervisor rubrics.
P.i.2.A5	FS.5	Demonstrate individual skills as a leader in solving multi-disciplinary problems.	Affective Level 5 (Characterization)	0.5	EEE4102: Modern Control Systems Lab	EEE3110: Engineering Shop				OEL/Project

PO-j/ PLO 10: Communication

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.i.1.A2	SS.1	Optimize engineering solution by giving and responding to clear instructions. (Communicate effectively by giving and responding to clear instructions to produce engineering solutions.)	Affective Level 2 (Responding)	0.4	EEE4000: Capstone Project	EEE4211: Measurement and Instrumentation Lab			A1, A3, A5	Viva/Presentation
P.i.2.P3	SS.4	Produce written engineering reports by applying principle-based approaches and design documentation on complex engineering activities for different stakeholders.	Psychomotor Level 3 (Precision)	0.25	EEE4000: Capstone Project	EEE4209: Telecommunications Engineering Lab			A1, A4	Report
P.i.3.A4	SS.	Make and deliver	Affective Level 4	0.25	BAS 1204: Bangladesh	EEE3110: Engineering			A1,	Presentation

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
	2	effective presentation based on complex engineering activities.	(Organizing)		Studies	Shop			A2	
P.j.4.P5	S S.3	use language flexibly and effectively for social, academic and professional purposes	Psychomotor Level 5 (Naturalization)	0.1	EEE2215: Engineering Ethics and Environmental Protection	EEE4000: Capstone Project				Presentation/Report

PO-k/ PLO 11: Project Management and Finance

Demonstrate 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, to manage projects and in multidisciplinary environments.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)
P.k.1.P4	TS.1	Apply engineering management principles and economic decision making to solve engineering projects as a team.	Psychomotor Level 4 (Articulation)	0.3	EEE3106: Industrial Electronics and Drives Lab	EEE4000: Capstone Project				Project Report
P.k.2.P4	TS.2	Manage multi-disciplinary components of a project as a member/leader.	Psychomotor Level 4 (Articulation)	0.3	EEE3110: Engineering Shop	EEE4000: Capstone Project				Project Report
P.k.3.A5	SS.5	Demonstrate competency in completing individual engineering project based on relevant management principles and economic models.	Affective Level 5 (Characterization)	0.4	EEE4213: Power Stations and Substations	EEE4000: Capstone Project				Project Report

PO-l/ PLO 12: Lifelong learning

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Indicators ID	BNQF Indicator	Indicators Definition	Domain	W	Course 1	Course 2	K	P	A	Assessment Technique(s)

P.I.1. A1	N/A	Investigate and gather information on a given engineering issue beyond classroom learning.	Affective Level 1 (Receiving)	0.3	EEE4209: Telecommunications Engineering	EEE4000: Capstone Project				Assignment/Report
P.I.2. P5	PS.1	Seek and use resources in solving engineering problems.	Psychomotor Level 5 (Naturalization)	0.4	EEE4211: Measurement and Instrumentation Lab	EEE4000: Capstone Project				Report
P.I.3. A5	PS.3	Recognizing the need for continuing education and participation in professional societies and meetings.	Affective Level 5 (Characterization)	0.3	EEE4000: Capstone Project	EEE4001: Internship/ Seminar/ Workshop				**Report**