

Bangladesh Army University of Engineering and Technology (BAUET)
Qadirabad, Natore



Department of
Electrical and Electronic Engineering (EEE)

Syllabus for
Bachelor of Science (B.Sc.) in
Electrical and Electronic Engineering (EEE)

Applicable for Session 2019-20 and onward

Preface to Second Edition

Bangladesh Army University of Engineering & Technology (BAUET) is one of the premier universities in the country now and has a bright prospect for its high standards in teaching and research. Ever since its inception, a strong commitment to excellence in teaching and research has been its main concentration.

Our previous departmental syllabus was published in 2015. Four years had been passed. In these years, Electrical and Electronic Engineering technologies have advanced rapidly. A significant change on the curriculum focusing Outcome Based Education (OBE) has become a fundamental demand by Board of Accreditation for Engineering and Technical Education (BAETE), Bangladesh. These new changes require a revised, vivid and dynamic look to our previous syllabus both in academic course outline and in the academic ordinance.

The Department of Electrical and Electronic Engineering (EEE) is one of the largest departments of the Bangladesh Army University of Engineering and Technology (BAUET). The department has run from the starting of this university with the aim of producing the best engineers, teachers, and professionals for the national and international arena. To cope with the rapidly changing scenarios in this field, updating the course curricula, expanding laboratory facilities and revising teaching and/or research materials are regular activities of the EEE department. The department constantly tries to revise, renew and introduce courses so that our students remain in balance with students of other standard universities in the world. The undergraduate syllabus presented in this course calendar is part of this ongoing change to meet the needs of present EEE students so that they can meet their carrier requirements in national and international forums.

The syllabus and the course offering listed in this catalog are prepared by teachers of the department with the help, cooperation and feedback from some renowned faculties. Students can now choose their field of specialization from any of the four fields, i.e. Communication, power, electronics and computer, without sacrificing the fundamental and basic study of core courses of electrical and electronic engineering. As a result of this and other major changes in course contents, the laboratory materials have also changed with more design-oriented classes having an emphasis on both practical and simulation components. The department has developed many facilities for such changes to be incorporated effectively and effort is also underway to improve the situation further.

Students and relevant individuals are advised to be in touch with their advisors and the department office to learn about any changes made by the department in any courses and in the rules and regulations of the university.

Head,
Department of Electrical and Electronic Engineering,
Bangladesh Army University of Engineering and Technology.

Chapter 4

Course Curriculum for Bachelor Degree in EEE

The list of course offered to the students of Electrical and Electronic Engineering (EEE) are categorized into Core courses and Elective courses. Some of the core courses are offered by the Department of EEE and some by other departments. Elective courses are grouped into Power, Electronics, Communication, Signal Processing and Interdisciplinary groups. Students have the flexibility to choose from amongst the Elective courses.

4.1 Distribution of Courses

Sl. No.	Department		Course Type-Credit Hour			Contact hours	Credit hours
			Theory	Sessional	Project/Thesis and others		
1	EEE	Core Courses	63.00	22.00	6.00+2.00+1.00	125	94.00
		Elective Courses	15.00	1.50	-	18.00	16.50
2	CSE		3.00	1.50	-	6.00	4.50
3	CE		-	1.50	-	3.00	1.50
4	ME		6.00	1.00	-	8.00	7.00
5	Physics		4.00	1.50	-	7.00	5.50
6	Chemistry		3.00	1.00	-	5.00	4.00
7	Mathematics		12.00	-	-	12.00	12.00
8	Humanities		14.00	1.00	-	16.00	15.00
Total						200	160.00

4.2 Core Courses for EEE Undergraduate Program

List of Core Courses-EEE

Sl. No	Course Code	Course Title	Credit hours
1.	EEE 1101	Electrical Circuits I	3.00
2.	EEE 1102	Electrical Circuits I Sessional	1.50
3.	EEE 1205	Electrical Circuits II	3.00
4.	EEE 1206	Electrical Circuits II Sessional	1.50
5.	EEE 2101	Electronic Circuits I	3.00
6.	EEE 2102	Electronics Circuits-I Sessional	1.50
7.	EEE 2103	Electrical Machines I	3.00
8.	EEE 2201	Signals and Linear Systems	3.00
9.	EEE 2205	Electrical Machines II	3.00
10.	EEE 2206	Electrical Machines Sessional	1.50
11.	EEE 2207	Electronic Circuits II	3.00
12.	EEE 2208	Electronics Circuits II Sessional	1.50
13.	EEE 2211	Numerical Methods	3.00
14.	EEE 2212	Numerical Methods Sessional	1.50
15.	EEE 3103	Digital Electronics	3.00

16.	EEE 3104	Digital Electronics Sessional	1.50
17.	EEE 3105	Power System I	3.00
18.	EEE 3106	Power System I Sessional	1.50
19.	EEE 3109	Communication System I	3.00
20.	EEE 3110	Communication System I Sessional	0.75
21.	EEE 3113	Electrical Measurement, Instrumentation and Sensors	3.00
22.	EEE 3114	Electrical Measurement, Instrumentation and Sensors Sessional	1.50
23.	EEE 3117	Engineering Electromagnetic	3.00
24.	EEE 3100	Integrated Design Project I	1.00
25.	EEE 3201	Control System I	3.00
26.	EEE 3202	Control System I Sessional	1.00
27.	EEE 3209	Communication system II	3.00
28.	EEE 3210	Communication System II Sessional	0.75
29.	EEE 3211	Digital Signal Processing I	3.00
30.	EEE 3212	Digital Signal Processing I Sessional	1.50
31.	EEE 3217	VLSI I	3.00
32.	EEE 3218	VLSI I Sessional	0.75
33.	EEE 3230	Industrial Training	1.00
34.	EEE 3200	Integrated Design Project II	1.00
35.	EEE 4000	Project/Thesis	6.00
36.	EEE 4107	Microprocessors and Embedded System	3.00
37.	EEE 4108	Microprocessors and Embedded System Sessional	0.75
38.	EEE 4122	Electrical Service Design & CAD Sessional	0.75
39.	EEE 4101	Biomedical Signals and Systems	3.00
40.	EEE 4102	Biomedical Signals and Systems Sessional	0.75
41.	EEE 4201	Solid State Devices	3.00
42.	EEE 4273	Power Electronics	3.00
43.	EEE 4274	Power Electronics Sessional	1.50
Total			97.00

List of Core Courses-CSE

Sl. No	Corse Code	Course Title	Credit hours
1	CSE 1209	Computer Programming	3.00
2	CSE 1210	Computer Programming Sessional	1.50
Sub Total			4.50

List of Core Courses-CE

Sl. No	Corse Code	Course Title	Credit hours
1	CE 1252	Engineering Drawing	1.50
Sub Total			1.50

List of Core Courses-ME

Sl. No	Course Code	Course Title	Credit hours
1	ME 2163	Fundamentals of Mechanical Engineering	3.00
2	ME 2164	Fundamentals of Mechanical Engineering Sessional	1.00
3	ME 4193	Industrial Management	3.00
Sub Total			7.00

List of Core Courses-Physics

Sl. No	Course Code	Course Title	Credit hours
1	PHY 1111	Physics	4.00
2	PHY 1112	Physics Sessional	1.50
Sub Total			5.50

List of Core Courses-Chemistry

Sl. No	Course Code	Course Title	Credit hours
1	CHEM 1211	Chemistry	3.00
2	CHEM 1212	Chemistry Sessional	1.00
Sub Total			4.00

List of Core Courses-Mathematics

Sl. No	Course Code	Course Title	Credit hours
1	MATH 1111	Engineering Mathematics-I	3.00
2	MATH 1215	Engineering Mathematics-II	3.00
3	MATH 2111	Engineering Mathematics-III	3.00
4	MATH 2213	Engineering Mathematics-IV	3.00
Sub Total			12.00

List of Core Courses-Humanities

Sl. No	Course Code	Course Title	Credit hours
1	HUM 1153	Bengali Language and Literature	2.00
2	HUM 1171	Technical English	2.00
3	HUM 1172	Technical English Sessional	1.00
4	HUM 1255	History of Independence	2.00
5	HUM 2127	Financial and Managerial Accounting	3.00
6	HUM 2177	Fundamentals of Economics	2.00
7	HUM 3257	Society, Environment and Ethics	3.00

Sub Total	15.00
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Final Year Thesis and Integrated Design Project

Thesis and Capstone project will have to be undertaken by students under separate supervisors in partial fulfillment of the requirement of his/her degree. Credits allotted to the thesis will be 6.00 and to the Integrated Design Project will be 2.00 corresponding to 12 Contact hours and 04 Contact hours respectively. Topic and advisor selection of capstone project must be finalized within 3rd Year, 1st Term.

4.3 Elective Courses

From 4th year, 1st Term, EEE Department starts offering elective courses under 3 groups viz. Power, Communication and Signal Processing and Electronics. There are total five elective courses. Out of which students will have to take at least three courses from individual group. The last two courses may be taken from individual group or other groups or Interdisciplinary group or combination of these groups.

Rules for distributing major and minor groups and elective courses are as follows:

1. Students will be assigned one of the three groups as major and another as minor by taking written options from the students. For regular students, this will be done in 3rd year, 2nd term.
2. Maximum number of students in any group as will be $N/3 \pm 0.15N$, where N is the number of students in a batch. However, this number may be changed because of service requirement for distributing groups among military students.
3. Major and minor group assignment will be based on options and CGPA of first five terms from 1st year, 1st term to 3rd year, 1st term. For military students, service requirement may be given priority.
4. A student will have to take at least three elective theory courses from the respective group and remaining 2 elective theory courses may be selected from the respective group or other groups or interdisciplinary group or combination of these groups.
5. Students will be assigned their 4th year theses/projects from the area of the respective group.
6. For selection of elective theory courses, preference will be given to the courses with higher number of choice from students and availability of teachers.
7. A student can take extra elective courses from any group in addition of minimum credit hours' requirement to obtain bachelor's degree.
8. In case of any unforeseen situation or ambiguity, the Departmental BUGS will take an appropriate decision

List of Elective Courses-Power

Sl. No.	Course Code	Course Title	Year	Credit hours
1	EEE 4*71	Power System II	4-I/ 4-II	3.00
2	EEE 4*73	Renewable Energy	4-I/ 4-II	3.00
3	EEE 4*75	Power Plant Engineering	4-I/ 4-II	3.00
4	EEE 4*77	Power System Protection	4-I/ 4-II	3.00
5	EEE 4*78	Power System Protection Sessional	4-I/ 4-II	1.50
6	EEE 4*79	Power System Reliability	4-I/ 4-II	3.00
7	EEE 4*81	Power System Operation and Control	4-I/ 4-II	3.00

8	EEE 4*83	High Voltage Engineering	4-I/ 4-II	3.00
9	EEE 4*84	High Voltage Engineering Sessional	4-I/ 4-II	1.50
10	EEE 4*85	Electrical Machines III	4-I/ 4-II	3.00

List of Elective Courses-Electronics

Sl. No.	Course Code	Course Title	Year	Credit hours
1	EEE 4*51	Processing and Fabrication Technology	4-I/ 4-II	3.00
2	EEE 4*53	Analog Integrated Circuits	4-I/ 4-II	3.00
3	EEE 4*55	Compound Semiconductor and Hetero-junction Devices	4-I/ 4-II	3.00
4	EEE 4*57	VLSI II	4-I/ 4-II	3.00
5	EEE 4*58	VLSI II Sessional	4-I/ 4-II	1.50
6	EEE 4*59	Optoelectronics	4-I/ 4-II	3.00
7	EEE 4*61	Semiconductor Device Theory	4-I/ 4-II	3.00

List of Elective Courses-Communication and Signal processing

Sl. No.	Course Code	Course Title	Year	Credit hours
1	EEE 4*03	Telecommunication Engineering	4-I/ 4-II	3.00
2	EEE 4*31	Digital Signal Processing II	4-I/ 4-II	3.00
3	EEE 4*33	Microwave Engineering	4-I/ 4-II	3.00
4	EEE 4*34	Microwave Engineering Sessional	4-I/ 4-II	1.50
5	EEE 4*35	Optical Fiber Communication	4-I/ 4-II	3.00
6	EEE 4*37	Digital Communication	4-I/ 4-II	3.00
7	EEE 4*38	Digital Communication Sessional	4-I/ 4-II	1.50
8	EEE 4*39	Mobile Cellular Communication	4-I/ 4-II	3.00
9	EEE 4*41	Random Signals and Processes	4-I/ 4-II	3.00
10	EEE 4*43	Radar and Satellite Communication	4-I/ 4-II	3.00
11	EEE 4*44	Radar and Satellite Communication Sessional	4-I/ 4-II	1.50
12	EEE 4*45	Communication Networks	4-I/ 4-II	3.00
13	EEE 4*46	Communication Networks Sessional	4-I/ 4-II	1.50

List of Elective Courses-Interdisciplinary

Sl. No.	Course Code	Course Title	Year	Credit hours
1	EEE 4*21	Control System II	4-I/ 4-II	3.00
2	EEE 4*22	Control System II Sessional	4-I/ 4-II	1.50
3	EEE 4*99	Antenna Array Signal Processing	4-I/ 4-II	3.00
4	CSE 4*91	Microprocessor System Design	4-I/ 4-II	3.00
5	CSE 4*92	Microprocessor System Design Sessional	4-I/ 4-II	1.50

4.4 Contact hours and Credit Hours Distribution in Eight Terms

Year/Term.	Theory		Sessional		Total Contact hours	Total Credit hours
	Contact hours	Credit hours	Contact hours	Credit hours		
1 st Year 1 st Term	14.00	14.00	8.00	4.00	22.00	18.00
1 st Year 2 nd Term	14.00	14.00	11.00	5.50	25.00	19.50
2 nd Year 1 st Term	17.00	17.00	5.00	2.50	22.00	19.50
2 nd Year 2 nd Term	15.00	15.00	9.00	4.50	24.00	19.50
3 rd Year 1 st Term	15.00	15.00	12.50	6.25	27.50	21.25
3 rd Year 2 nd Term	15.00	15.00	12.00	6.00	27.00	21.00
4 th Year 1 st Term	15.00	15.00	10.50	5.25	25.50	20.25
4 th Year 2 nd Term	15.00	15.00	12.00	6.00	27.00	21.00
Total	120.00	120.00	80	40	200	160

4.4 Sequence of Offered Courses in Eight Terms

1 st Year 1 st Term					
Sl. No	Course Code	Course Title	Type of Course	Contact hours	Credit hours
1	EEE 1101	Electrical Circuits I	Theory	3.00	3.00
2	EEE 1102	Electrical Circuits I Sessional	Sessional	3.00	1.50
3	PHY 1111	Physics	Theory	4.00	4.00
4	PHY 1112	Physics Sessional	Sessional	3.00	1.50
5	MATH 1111	Engineering Mathematics I	Theory	3.00	3.00
6	HUM 1171	Technical English	Theory	2.00	2.00
7	HUM 1172	Technical English Sessional	Sessional	2.00	1.00
8	HUM 1153	Bengali Language and Literature	Theory	2.00	2.00
Total				22.00	18.00

1 st Year 2 nd Term					
Sl. No	Course Code	Course Title	Type of Course	Contact hours	Credit hours
1	EEE 1205	Electrical Circuits II	Theory	3.00	3.00
2	EEE 1206	Electrical Circuit II Sessional	Sessional	3.00	1.50
3	CSE 1209	Computer Programming	Theory	3.00	3.00
4	CSE 1210	Computer Programming Sessional	Sessional	3.00	1.50
5	CE 1252	Engineering Drawing	Sessional	3.00	1.50
6	MATH 1215	Engineering Mathematics II	Theory	3.00	3.00
7	CHEM 1211	Chemistry	Theory	3.00	3.00
8	CHEM 1212	Chemistry Sessional	Sessional	2.00	1.00
9	HUM 1255	History of Independence	Theory	2.00	2.00
Total				25.00	19.50

2nd Year 1st Term					
Sl. No	Course Code	Course Title	Type of Course	Contact hours	Credit hours
1	EEE 2101	Electronic Circuits I	Theory	3.00	3.00
2	EEE 2102	Electronic Circuits I Sessional	Sessional	3.00	1.50
3	EEE 2103	Electrical Machines I	Theory	3.00	3.00
4	ME 2163	Fundamentals of Mechanical Engineering	Theory	3.00	3.00
5	ME 2164	Fundamentals of Mechanical Engineering Sessional	Sessional	2.00	1.00
6	MATH 2111	Engineering mathematics III	Theory	3.00	3.00
7	HUM 2127	Financial and Managerial Accounting	Theory	3.00	3.00
8	HUM 2177	Fundamentals of Economics	Theory	2.00	2.00
Total				22.00	19.50

2nd Year 2nd Term					
Sl. No	Course Code	Course Title	Type of course	Contact hours	Credit hours
1	EEE 2201	Signals and Linear Systems	Theory	3.00	3.00
2	EEE 2205	Electrical Machines II	Theory	3.00	3.00
3	EEE 2206	Electrical Machines Sessional	Sessional	3.00	1.50
4	EEE 2207	Electronic Circuits II	Theory	3.00	3.00
5	EEE 2208	Electronics Circuit II Sessional	Sessional	3.00	1.50
6	EEE 2211	Numerical Methods	Theory	3.00	3.00
7	EEE 2212	Numerical Methods Sessional	Sessional	3.00	1.50
8	MATH 2213	Engineering Mathematics IV	Theory	3.00	3.00
Total				24.00	19.50

3 rd Year 1 st Term					
Sl. No	Course Code	Course Title	Type of course	Contact hours	Credit hours
1	EEE 3100	Integrated Design Project I	-	2.00	1.00
2	EEE 3103	Digital Electronics	Theory	3.00	3.00
3	EEE 3104	Digital Electronics Sessional	Sessional	3.00	1.50
4	EEE 3105	Power System I	Theory	3.00	3.00
5	EEE 3106	Power System I Sessional	Sessional	3.00	1.50
6	EEE 3109	Communication system I	Theory	3.00	3.00
7	EEE 3110	Communication System-I Sessional	Sessional	1.50	0.75
8	EEE 3113	Electrical Measurement, Instrumentation and Sensors	Theory	3.00	3.00
9	EEE 3114	Electrical Measurement Instrumentation and Sensors Sessional	Sessional	3.00	1.50
10	EEE 3117	Engineering Electromagnetic	Theory	3.00	3.00
Total				27.50	21.25

3 rd Year 2 nd Term					
Sl. No	Course Code	Course Title	Type of course	Contact hours	Credit hours
1	EEE 3200	Integrated Design Project II	-	2.00	1.00
2	EEE 3201	Control System I	Theory	3.00	3.00
3	EEE 3202	Control System-I Sessional	Sessional	2.00	1.00
4	EEE 3209	Communication System II	Theory	3.00	3.00
5	EEE 3210	Communication System II Sessional	Sessional	1.50	0.75
6	EEE 3211	Digital signal Processing-I	Theory	3.00	3.00
7	EEE 3212	Digital signal Processing I Sessional	Sessional	3.00	1.50
8	EEE 3217	VLSI I	Theory	3.00	3.00
9	EEE 3218	VLSI I Sessional	Sessional	1.50	0.75
10	EEE 3230*	Industrial Training	-	2.00 (6 Weeks)	1.00
11	HUM 3257	Society, Environment and Ethics	Theory	3.00	3.00
Total				27.00	21.00

*EEE 3230 (Industrial Training/attachment) will be conducted at any convenient time after the year end exam of sem-2 for a duration of 06 weeks as applicable or decided by the department.

4th Year 1st Term					
Sl. No	Course Code	Course Title	Type of Course	Contact hours	Credit hours
1	EEE 4000	Project and Thesis	-	6.00	3.00
2	EEE 4101	Biomedical Signals and Systems	Theory	3.00	3.00
3	EEE 4102	Biomedical Signals and Systems Sessional	Sessional	1.50	0.75
4	EEE 4107	Microprocessors and Embedded System	Theory	3.00	3.00
5	EEE 4108	Microprocessors and Embedded System Sessional	Sessional	1.50	0.75
6	EEE 41**	Elective I	Theory	3.00	3.00
7	EEE 41**	Elective II	Theory	3.00	3.00
8	EEE 4122	Electrical Service Design & CAD Sessional	Sessional	1.50	0.75
9	ME 4193	Industrial Management	Theory	3.00	3.00
Total				25.50	20.25

4th Year 2nd Term					
Sl. No	Course Code	Course Title	Type of Course	Contact hours	Credit hours
1	EEE 4000	Project and Thesis	-	6.00	3.00
2	EEE 4201	Solid State Devices	Theory	3.00	3.00
3	EEE 4273	Power Electronics	Theory	3.00	3.00
4	EEE 4274	Power Electronics Sessional	Sessional	3.00	1.50
5	EEE 42**	Elective III	Theory	3.00	3.00
6	EEE 42**	Elective IV	Theory	3.00	3.00
7	EEE 42**	Elective IV Sessional	Sessional	3.00	1.50
8	EEE 42**	Elective V	Theory	3.00	3.00
Total				27.00	21.00