Department of Electrical and Electronic Engineering

The Department of Electrical and Electronic Engineering offers 4 Years graduation program leading to the degree of B.Sc. Electrical and Electronic Engineering (B.Sc. in EEE). The hours for completion of the B.Sc. in EEE program has been set to 157 credit hours. The program include courses from (1) general areas namely, English, physics, chemistry, mathematics, social basic mechanical engineering, accounting, business, economics, and management, and from (2) engineering disciplines namely, electrical, electronics, power system, communication, control, and computer engineering as major areas. The program requires some of the courses as core courses and it has left option for the students to choose a few courses as electives for specialization. The curriculum has been designed to make the program goal-oriented to fulfill the needs of the age. Courses on economics, organization management and project management have been included. This has been done to enable the graduates to build the management skills because the graduates will also have to manage projects as well as run an organization. These courses will also develop their capability to be entrepreneurs, too.

Course Distribution

Credit hours requirements of B.Sc. in EEE program are as given below:

(1) Course Category	**(2) Detailed Course Areas**		**(3) Compulsory**		**(4) Electives**		**(5) Row total**
			(*i*) Compulsory	**(*ii*) Lab/Sessional**	**(*i*) Theory**	**(*ii*) Lab/Sessional**	
	01	English	03	-	-	-	03
	03	Business and Management	03	-	-	-	03
	04	Mathematics & Statistics	18		-	-	18
	05	Physical Sciences	09	3.75	-	-	12.75
	06	Mechanical Engineering	02	1.00	-	-	3
	07	Computer Science & Engineering.	12	2.25	-	-	14.25
	08	Electrical Engineering	27	7.5	-	-	34.5
	09	Power Systems	18	0.50	9.0		18.5 + 09*
	10	Electronic Engineering	21	5			26 + 09*
	11	Communication Engineering.	15	2.25			17.25 + 9*
	12	Project	-	0.75	-	-	0.75
	13	Thesis	-	5	-	-	5
	14	Professional Orientation	1	-	-	-	1
		Column total =	129	28	9	-	157
* To be added only once either to the total of row 09 or row 10 or row 11.							

Graduation requirements
To obtain the B. Sc. EEE degree a student will have to complete 157 credit hours with a minimum CGPA of 2.50.

Duration of the Program
The duration for B.Sc. in Electrical and Electronic Engineering (BSEEE) program will be four years divided into 12 semesters. The maximum time for completion of the program is seven years.

Evaluation Procedures
Evaluation of students' performance will be based on final examination, midterm examination, class-test/assignments and attendance. Classroom evaluation including attendance, class tests and assignments will cover 40% of the total marks and the remaining 60% are reserved for the midterm and final examinations. For Lab courses evaluation will be based on attendance, Lab assignment, Lab report, Experiment and Viva. The distribution of marks and grading system are as follows.

Evaluation Procedures
Evaluation of students' performance will be based on final examination, midterm examination, class-test/assignments and attendance. Classroom evaluation including attendance, class tests and assignments will cover 40% of the total marks and the remaining 60% are reserved for the midterm and final examinations. For Lab courses evaluation will be based on attendance, Lab assignment, Lab report, Experiment and Viva. The distribution of marks and grading system are as follows.

❑ **Marking System:**

Theory course:		**Lab course:**	
Attendance	10%	Attendance	10%
Class test	10%	Lab Assignment	10%
Assignment	6%	Report	10%
Presentation	14%	Project/experiment	50%
Midterm Examination	25%	Viva	20%
Final Examination	35%		

❑ **Grading System:**

Numerical Grade	Letter Grade	Grade Point
80% and above	A+(A Plus)	4.00
75% to less than 80%	A (A Regular)	3.75
70% to less than 75%	A- (A Minus)	3.50
65% to less than 70%	B+ (B Plus)	3.25
60% to less than 65%	B (B Regular)	3.00
55% to less than 60%	B- (B Minus)	2.75
50% to less than 55%	C+ (C Plus)	2.50
40% to less than 50%	C (C Regular)	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00

The Credit Hour System
The procedure of Credit Hour Semester System which will be practiced in the academic program at the University involves 13 weeks of class room instructions in each semester. For all 3 credit theory and 1.50 credit Lab courses, contact hour is 3 period/week. Each class period of theory/Lab courses will have a minimum duration of 50 minutes.

The Semester System and Semester Schedule
An academic year comprises three semesters, each semester spanning 4 months: 13 weeks for instruction and 3 weeks for registration and examinations. Semester starts at January (Spring Semester), May (Summer Semester) and September (Fall Semester).

Types of Courses
The courses of the undergraduate curricula are divided into several groups:

Non-Engineering Courses	1. General Education Courses 2. Mathematics Courses 3. Basic Science Courses
Engineering and Technology courses	1. EEE Core Courses 2. Interdisciplinary Courses 3. Technical Elective Courses

Earned Credits
The course in which a student obtains 'D' or higher grade will be counted as credit earned by the student. 'F' grade is not counted towards a student's earned credits. A student who obtains an 'F' grade in any core course has to repeat the course. If a student obtains an 'F' grade in an optional course, he/she may choose or repeat the course or take a substitute course if available. 'F' grade is not counted for GPA calculations but will be shown on the Grade Sheet and Transcript. Students can appear in the supplementary examination to improve their grades. However, a student is permitted to appear in supplementary examinations not more than twice for a course and his/her credit is determined by averaging the marks obtained in the supplementary and original examination.

Note: If Letter Grade 'I' (Incomplete) is awarded to any student in course, it will indicate that he/she has attended the course but did not appear in the semester midterm/final examination. Letter Grade 'W' indicates withdrawn from the course.

Cumulative Grade Point Average
Student's performance will be evaluated on the basis of Grade point Average (GPA) semester wise and Cumulative Grade Point Average (CGPA) of total completed courses.

The CGPA will be computed in the following manner.

$$\text{CGPA} = \frac{\sum \text{Grade points} \times \text{Credits}}{\sum \text{Credits}}$$

Admission Requirement
The minimum qualifications for admission into the undergraduate program are:
Academic Qualifications:

1. At least second division in both SSC and HSC (No third division is acceptable) or Minimum 2.5 GPA out of 5.00 in both S.S.C and H.S.C. Student should be from Science background with Math and physics.
   O-Level and A-Level:
   Five subjects in University of London GCE O-level and three major subjects (Math, Physics and Chemistry) in A-level are required, minimum average GPA of combined O-level and A-level is 3 (grade C), according to scale; A=5, B=4, C=3, D=2 & E=1.
2. A US high school diploma or equivalent
3. Acceptable scores in VIVA Test of the university.

Degree Requirements

The degree requirements of Bachelor of Science degree in Electrical and Electronic Engineering are:

1. Completion of 157 credit hour courses
2. Completion of a dissertation with at least a 'C' grade (5.0 credit hours)
3. Passing of all courses individually and maintaining a minimum CGPA of 2.50.

Abbreviations, Symbols, and Course Numbering System

The course symbols have the following meanings.

ENG: English
CHM: Chemistry
PHY: Physics
MAT: Mathematics
BAM: Business, Accounting and Management
ME: Mechanical Engineering
STA: Statistics
CSE: Computer Science and Engineering
EEE: Electrical and Electronic Engineering

The list of the courses those shall be offered under the program are given below:

Courses for B.Sc. in EEE Program

Course Code	Course Title	Credit Hrs.	Prerequisite(s)
English:			
CEL 111	Communicative English Language	3.0	
Mathematics and Statistics:			
MAT 111	Differentials and Integral Calculus	3.0	
MAT 121	Differential Equation and Numerical Methods	3.0	MAT 111
MAT 131	Linear Algebra and Matrix Analysis	3.0	
MAT 211	Co-ordinate Geometry and Vector Analysis	3.0	MAT 111, MAT 121
STA 221	Probability and Statistics	3.0	
MAT 221	Complex Variable and Laplace, Fourier and Z Transform	3.0	MAT 111, MAT 121
Physical Sciences:			
PHY 111	Physics I	3.0	
PHY 112	Physics I Lab	1.5	
PHY 121	Physics II	3.0	
PHY 122	Physics II Lab	1.5	
CHM 121	Chemistry	3.0	
CHM 122	Chemistry Lab	0.75	
Business and Management course			
BAM 225	Principles of Business Accounting and Management	3.0	
Mechanical Engineering Course			
ME 121	Fundamentals of Mechanical Engineering	2.0	
ME 132	Engineering Drawing	1.0	

Computer Science Courses (core)

CSE 137 Computer Fundamentals	3.0	
CSE 213 Structured programming (C)	3.0	CSE 137
CSE 214 Structured Programming (C) Sessional	1.5	
CSE 327 Microprocessor Systems and Interfacing	3.0	EEE 237
CSE 328 Microprocessor Systems and Interfacing Lab	0.75	

Electrical and Electronic Engineering Courses (Core)

EEE 121 Basic Electrical Engineering	3.0	
EEE 122 Basic Electrical Engineering Lab	1.5	
EEE 131 Circuit Analysis I	3.0	EEE 121
EEE 132 Circuit Analysis I Lab	0.75	
EEE 133 Engineering Materials	3.0	
EEE 211 Circuit Analysis II	3.0	EEE 131
EEE 217 Electronics I	3.0	EEE 131
EEE 218 Electronics I Lab	1.5	
EEE 227 Electronics II	3.0	EEE 217
EEE 228 Electronics II Lab	1.5	
EEE 230 Circuit Simulation Lab	1.5	
EEE 235 Electrical Machine I	3.0	EEE 131
EEE 237 Digital Electronics	3.0	EEE 227
EEE 238 Digital Electronics Lab	1.5	
EEE 239 Electro Magnetic Fields	3.0	MAT 211
EEE 311 Measurements and Instrumentation	3.0	
EEE 312 Measurements and Instrumentation Lab	1.5	
EEE 315 Electrical Machine II	3.0	EEE 235
EEE 316 Electrical Machine I & II Lab	1.5	EEE 236
EEE 319 Signals and Systems	3.0	EEE 121, MAT 221, MAT 121
EEE 323 Communication I	3.0	MAT 121
EEE 325 Electrical Machine III	3.0	EEE 315
EEE 329 Power Transmission and Distribution	3.0	
EEE 331 Power Electronics	2.0	EEE 227
EEE 332 Power Electronics Lab	0.5	
EEE 333 Communication II	3.0	EEE 323
EEE 334 Communication I & II Lab	1.5	
EEE 337 Digital Signal Processing I	3.0	EEE 319
EEE 339 Power System I	3.0	EEE 329
EEE 413 Power System II	3.0	EEE 339
EEE 414 Power System I & II Lab	0.75	
EEE 417 Control System Engineering	3.0	EEE 319
EEE 418 Control System Engineering Lab	0.75	
EEE 419 Renewable Energy Technology	3.0	
EEE 423 Microwave Engineering	3.0	EEE 319
EEE 424 Microwave Engineering Lab	0.75	
EEE 427 Microcontroller and Embedded System Design	3.0	CSE 327
EEE 435 Power Plant Engineering	3.0	EEE 329

Electrical and Electronic Engineering Courses (Electives)

A Student may choose any one course from the following three Specialized Courses.

(A) Specialized Courses for Power

EEE 473 Switchgear and Protection	3.0	EEE 329
EEE 479 Power System Reliability	3.0	STA 221, EEE 329
EEE 485 Power System Operation and Control	3.0	EEE 329
EEE 489 High Voltage Engineering	3.0	EEE 329

(B) Specialized Courses for Electronics

EEE 433 Analog Integrated Circuits	3.0	
EEE 437 Digital Integrated Circuit Design	3.0	
EEE 441 Processing and Fabrication Technology	3.0	
EEE 451 VLSI I	3.0	EEE 337
EEE 471 VLSI II	3.0	EEE 451
EEE 481 Optoelectronics	3.0	
EEE 491 Semiconductor Device Theory	3.0	

(C) Specialized Courses for Communication

EEE 447 Random Signals and Processes	3.0	
EEE 449 Digital Signal Processing II	3.0	EEE 337
EEE 467 Digital Communication	3.0	
EEE 487 Mobile Cellular Communication	3.0	
EEE 493 Telecom Engineering	3.0	
CSE 333 Computer Networking	3.0	
EEE 457 Bio-Informatics	3.0	

Thesis/ Project work:

EEE 300 Project	0.75
EEE 400 Thesis	5.0

Suggested course sequence for B.Sc. in EEE Program

First Year: 1st Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
CEL 111	Communicative English Language	3.0	
MAT 111	Differential and Integral Calculus	3.0	
CHM 111	Chemistry	3.0	
CHM 112	Chemistry Lab	0.75	
PHY 111	Physics I	3.0	
PHY 112	Physics I Lab	1.5	
	Total:	14.25	

First Year: 2nd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
ME 121	Fundamentals of Mechanical Engineering	2.0	
MAT 121	Differential and Integral Calculus	3.0	MAT 111
PHY 121	Physics II	3.0	
PHY 122	Physics II Lab	1.5	
EEE 121	Basic Electrical Engineering	3.0	
EEE 122	Basic Electrical Engineering Lab	1.5	
	Total:	14.00	

First Year: 3rd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
MAT131	Linear Algebra and Matrix Analysis	3.0	
ME 132	Engineering Drawing	1.0	
CSE 137	Computer Fundamentals	3.0	
EEE 131	Circuit Analysis I	3.0	EEE 121
EEE 132	Circuit Analysis Lab	0.75	EEE122
EEE 133	Engineering Materials	3.0	
	Total:	13.75	

Second Year: 1st Semester			
Course No	**Course Title**	**Cr, Hrs.**	**Prerequisite(s)**
EEE 211	Circuit Analysis II	3.0	EEE 131
MAT 211	Co-ordinate Geometry and Vector Analysis	3.0	MAT 111, MAT 121
CSE 213	Structured Programming (C)	3.0	CSE 137
CSE 214	Structured Programming (C) Sessional	1.5	
EEE 217	Electronics I	3.0	EEE 131
EEE 218	Electronics Lab	1.5	
	Total:	15.0	

Second Year: 2nd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
BAM 225	Principles of Business, Accounting and Management	3.0	
STA 221	Probability and Statistics	3.0	
MAT 221	Complex Variable and Laplace, Fourier and Z Transform	3.0	MAT 121
EEE 227	Electronics II	3.0	EEE 217
EEE 228	Electronics II Lab	1.5	
	Total:	13.5	

Second Year: 3rd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 230	Circuit Simulation Lab	1.5	
EEE 237	Digital Electronics	3.0	EEE 227
EEE 238	Digital Electronics Lab	1.5	
EEE 235	Electrical Machine I	3.0	EEE 131
EEE 239	Electro-Magnetic Fields	3.0	MAT 211
	Total:	12.00	

Third Year: 1st Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 319	Signals and Systems	3.0	EEE 131, MAT 221
EEE 315	Electrical Machine II	3.0	EEE 235
EEE 316	Electrical machine I & II Lab	1.5	EEE 316
EEE 311	Measurements and Instrumentation	3.0	
EEE 312	Measurements and Instrumentation Lab	1.5	
	Total:	12.00	

Third Year: 2nd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
CSE 327	Microprocessor Systems and Interfacing	3.0	EEE 237
CSE 328	Microprocessor Systems and Interfacing Lab	0.75	
EEE 329	Power Transmission and Distribution	3.0	
EEE 323	Communication I	3.0	MAT 111
EEE 325	Electrical Machine III	3.0	EEE 315
	Total:	12.75	

Third Year: 3rd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 331	Power Electronics	2.0	EEE 227
EEE 332	Power Electronics Lab	0.5	
EEE 337	Digital Signal Processing I	3.0	
EEE 333	Communication II	3.0	EEE 323
EEE 334	Communication I & II Lab	1.5	
EEE 339	Power System I	3.0	EEE 329
EEE 300	Project	0.75	
	Total:	13.75	

Fourth Year: 1st Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 413	Power System II	3.0	EEE 339
EEE 414	Power System I & II	1.5	
EEE 417	Control System Engineering	3.0	EEE 319
EEE 418	Control System Engineering Lab	0.75	
EEE 419	Renewable Energy Technology	3.0	
EEE ***	Specialized Courses for Power (A)	3.0	***$
EEE 400	Thesis	1.0	
	Total:	15.25	

Fourth Year: 2nd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 423	Microwave Engineering	3.0	EEE 319
EEE 424	Microwave Engineering Lab	0.75	
EEE 427	Microcontroller and Embedded System Design	3.0	
EEE ***	Specialized Courses for Electronics (B)	3.0	***$
EEE 400	Thesis	1.0	
	Total:	10.75	

Fourth Year: 3rd Semester			
Course No	**Course Title**	**Cr. Hrs.**	**Prerequisite(s)**
EEE 435	Power Plant Engineering	3.0	EEE 329
EEE ***?	Specialized Courses for Communication (C)	3.0	***$
EEE 400	Thesis	3.0	
EEE 401	Professional Orientation	1.0	
	Total:	10.0	

Form the major area a student has to take two courses and from each minor area the student has to choose one course making a total of 9.0 cr. hrs. EEE 473 (Switchgear and protection) is recommended as minor elective course I by the department. But a student may take different courses as minor elective course.