

### Semester-wise Breakdown BEE Program Fall-2022 Intake and beyond

<b>Semester I</b>				
<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hrs. (Theory-Lab-Credits)</b>
1.	MA110	Calculus & Analytical Geometry	---	(3-0-3)
2.	PH110	Applied Physics	---	(2-1-3)
3.	CE100	Information and Communication Technologies	---	(2-0-2)
	CE100L	Information and Communication Technologies Lab	---	(0-1-1)
4.	EE100	Circuit Analysis	---	(3-0-3)
	EE100L	Circuit Analysis Laboratory	---	(0-1-1)
5.	EL105	Functional English	---	(2-0-2)
6.	HU124	Islamic Studies and Ethics	---	(2-0-2)
7.	MT171	Engineering Drawing	---	(0-1-1)
<b>No. of Courses= 7</b>		<b>Credit Hours = 18</b>	<b>Contact Hours = 26</b>	<b>Labs = 4</b>

<b>Semester II</b>				
<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hrs. (Theory-Lab-Credits)</b>
1.	MA105	Multivariable Calculus	MA110	(3-0-3)
2.	MA106	Differential Equations	MA110	(3-0-3)
3.	HU125	Pakistan Studies & Global Perspective	---	(2-0-2)
4.	EE105	Electrical Network Analysis	EE100	(3-0-3)
	EE105L	Electrical Network Analysis Laboratory	EE100	(0-1-1)
5.	CE112	Computer Programming	---	(2-0-2)
	CE112L	Computer Programming Laboratory	---	(0-1-1)
6.	MT103	Workshop Practice	---	(0-1-1)
7.	EL106	Communication Skills	---	(2-0-2)
<b>No. of Courses =6</b>		<b>Credit Hours = 18</b>	<b>Contact Hours = 24</b>	<b>Labs = 3</b>

Semester III				
S. No	Course Code	Courses	Pre-requisites	Credit Hrs. (Theory-Lab-Credits)
1.	EE213	Electromagnetic Theory	MA105	(3-0-3)
2.	CE113	Object Oriented Programming	CE112	(3-0-3)
	CE113L	Object Oriented Programming Laboratory	CE112	(0-1-1)
3.	EE223	Digital Logic Design	---	(3-0-3)
	EE223L	Digital Logic Design Laboratory	---	(0-1-1)
4.	EE286	Electronic Devices and Circuits	---	(3-0-3)
	EE286L	Electronic Devices and Circuits Laboratory	---	(0-1-1)
5.	MA220	Linear Algebra & Transforms	MA110	(3-0-3)
No. of Courses =5		Credit Hours = 18	Contact Hours = 24	Labs = 3

Semester IV				
S. No	Course Code	Courses	Pre-requisites	Credit Hrs. (Theory-Lab-Credits)
1.	MA301	Probability and Statistics	---	(3-0-3)
2.	XXX	Social Sciences Elective-I	---	(2-0-2)
3.	EE235	Signals and Systems	---	(3-0-3)
	EE235L	Signals and Systems Laboratory	---	(0-1-1)
4.	EE209	Electronic Circuit Design	---	(3-0-3)
	EE209L	Electronic Circuit Design Laboratory	---	(0-1-1)
5.	EE241	Electrical Machines	EE213	(3-0-3)
	EE241L	Electrical Machines Laboratory	EE213	(0-1-1)
No. of Courses = 5		Credit Hours = 17	Contact Hours = 23	Labs = 3

<b>Semester V</b>				
<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hrs. (Theory-Lab-Credits)</b>
1.	EE383	Electrical Measurements and Instrumentation	---	(3-0-3)
	EE383L	Electrical Measurements and Instrumentation Laboratory	---	(0-1-1)
2.	EE381	Power Electronics I	---	(3-0-3)
	EE381L	Power Electronics I Laboratory	---	(0-1-1)
3.	EE328	Microprocessors and Microcontrollers	EE223	(3-0-3)
	EE328L	Microprocessors and Microcontrollers Laboratory	EE223	(0-1-1)
4.	XXX	Social Sciences Elective-II	---	(2-0-2)
5.	HU407	Community Service Learning		(0-0-0)
6.	EE347	Power Distribution and Utilization Systems	---	(3-0-3)
<b>No. of Courses = 6</b>		<b>Credit Hours = 17</b>	<b>Contact Hours = 23</b>	<b>Labs = 3</b>

<b>Semester VI</b>				
<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hrs. (Theory-Lab-Credits)</b>
1.	EE338	Digital Signal Processing	EE235	(3-0-3)
	EE338L	Digital Signal Processing Laboratory	EE235	(0-1-1)
2.	XXX	MDEE-I		(3-0-3)
3.	EL203	Technical Writing and Presentation skills	---	(2-0-2)
4.	EE355	Control Systems	---	(3-0-3)
	EE355L	Control Systems Laboratory	---	(0-1-1)
5.	EE492	Final Year Project I	---	(0-1-1)
6.	MA221	Numerical Analysis & Computations	---	(2-0-2)
	MA221L	Numerical Analysis & Computations Lab	---	(0-1-1)
<b>No. of Courses = 6</b>		<b>Credit Hours = 17</b>	<b>Contact Hours = 25</b>	<b>Labs = 4</b>

Semester VII				
S. No	Course Code	Courses	Pre-requisites	Credit Hrs. (Theory-Lab-Credits)
1.	EEXXX	Elective I	---	(3-0-3)
	EEXXXL	Elective I Laboratory	---	(0-1-1)
2.	EEXXX	Elective II		(3-0-3)
	EEXXXL	Elective II Laboratory		(0-1-1)
3.	EE475	Analog & Digital Communication	---	(3-0-3)
	EE475L	Analog & Digital Communication Laboratory	---	(0-1-1)
4.	XXX	Management Elective I	---	(2-0-2)
5.	EE493	Final Year Project II	EE492	(0-2-2)
No. of Courses = 5		Credit Hours = 16	Contact Hours = 26	Labs = 5

Semester VIII				
S. No	Course Code	Courses	Pre-requisites	Credit Hrs. (Theory-Lab-Credits)
1.	EEXXX	Elective III	---	(3-0-3)
	EEXXXL	Elective III Laboratory	---	(0-1-1)
2.	EMXXX	Management Elective-II	---	(2-0-2)
3.	XXX	MDEE-II	---	(3-0-3)
4.	EE494	Final Year Project III	EE493	(0-3-3)
5.	MT489	Occupational Health and Safety	---	(1-0-1)
6.	FLXXX	Language Elective	---	(0-0-0)
No. of Courses = 6		Credit Hours = 13	Contact Hours = 21/23	Labs = 4/5

No. of Courses = 47	Credit Hours = 134		Labs =29
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**List of Electives for Fall 2022 Intake and beyond**

S. No.	Course Code	Courses	Pre-Requisite	Credit Hours
1.	EE304	Digital Electronics	EE100	(3-0-3)
	EE304L	Digital Electronics Laboratory	EE100	(0-1-1)
2.	EE429	FPGA Based Design	---	(3-0-3)
	EE429L	FPGA-Based Design Laboratory	---	(0-1-1)
3.	EE406	Linear Integrated Circuit Design	---	(3-0-3)
	EE406L	Linear Integrated Circuit Design Laboratory	---	(0-1-1)
4.	EE407	VLSI Design	EE304	(2-0-2)
	EE407L	VLSI Design Laboratory	EE304	(0-1-1)
5.	EE408	Introduction to Nanotechnology	PH110	(3-0-3)
6.	EE409	Solid State Devices	EE209	(3-0-3)
7.	EE348	Power Generation Systems	EE241	(3-0-3)
	EE348L	Power Generation Systems Laboratory	EE241	(0-1-1)
8.	EE382	Power Electronics II	EE381	(3-0-3)
	EE382L	Power Electronics II Laboratory	EE381	(0-1-1)
9.	EE444	Power Transmission Systems	EE105	(3-0-3)
	EE444L	Power Transmission Systems Laboratory	EE105	(0-1-1)
10.	EE446	Power System Analysis	---	(3-0-3)
	EE446L	Power System Analysis Lab	---	(0-1-1)
11.	EE447	Power System Protection	---	(3-0-3)
	EE447L	Power System Protection Laboratory	---	(0-1-1)
12.	EE448	Power System Protection and Control	---	(3-0-3)
	EE448L	Power System Protection and Control Laboratory	---	(0-1-1)
13.	EE449	Renewable Energy Systems	---	(3-0-3)
14.	EE450	Smart Grids	---	(3-0-3)

**Multi-Disciplinary Engineering (MDEE) Electives for Fall 2022 Intake and beyond**

S. No.	Course Code	Courses	Pre-Requisite	Credit Hours
1.	CE204	Discrete Structures	---	(3-0-3)
2.	MT371	Introduction to Bio-Mechatronics	---	(3-0-3)
3.	MT467	Applied Robotics	---	(3-0-3)
4.	MT473	Laser and its Applications	---	(3-0-3)
5.	MT481	Introduction to Fuzzy Logic	---	(3-0-3)
6.	MT485	System Reliability and Safety	---	(3-0-3)
7.	BM304	Biomedical Engineering Systems	---	(3-0-3)
8.	BM414	DNA Computing	---	(3-0-3)
9.	BM434	Medical Robotics	---	(3-0-3)
10.	BM435	Bioinformatics	---	(3-0-3)
11.	ME131	Thermodynamics-I	---	(3-0-3)
12.	CE338	Introduction to Cyber Security	---	(3-0-3)
13.	CE353	Introduction to AI	---	(2-0-2)
	CE353L	Introduction to AI Lab		(0-1-1)
14.	CE430	Introduction to IoT	---	(3-0-3)

**Humanities & Social Sciences Electives for Fall 2022 Intake and beyond**

S. No	Course Code	Courses	Pre-requisites	Credit Hours
1.	HU215	Ethics	---	(2-0-2)
2.	HU213	Introduction to Psychology	---	(2-0-2)
3.	MT302	Professional Ethics	---	(2-0-2)
4.	HU314	Contemporary International Relations	---	(2-0-2)
5.	BA334	Engineering Economics	---	(2-0-2)

**Language Electives for Fall 2022 Intake and beyond**

<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hours</b>
1.	FL200	Arabic	---	(3-0-3)
2.	FL201	French	---	(3-0-3)
3.	FL202	Chinese	---	(3-0-3)

**Management Electives for Fall 2022 Intake and beyond**

<b>S. No</b>	<b>Course Code</b>	<b>Courses</b>	<b>Pre-requisites</b>	<b>Credit Hours</b>
1.	EM436	Engineering Management & Entrepreneurship	---	(2-0-2)
2.	EM437	Engineering Procurement & Contract Management	---	(2-0-2)
3.	EM438	Engineering Project Management	---	(2-0-2)