

Mahindra École Centrale

Bahadurpally, Hyderabad 500043

ACADEMIC REGULATIONS FOR FOUR-YEAR UNDERGRADUATE DEGREE PROGRAMS

(Applicable to students joining in the Academic Year 2016-17 and onwards)

COURSE CATEGORIES

S. No.	Category	Description
1	CB – Chemistry and Biology	Courses in Chemistry and Biology.
2	PH - Physics	Courses in Physics
3	ES – Engineering Science	Courses in Engineering Sciences
4	CE – Civil Engineering	Courses related to Civil Engineering
5	CS – Computer Science	Courses in Computer Science and Technology
6	EE – Electrical Engineering	Courses of Electrical Engineering
7	ME – Mechanical Engineering	Courses in Mechanical Engineering
8	HS – Humanities and Social Sciences	Courses in Language, Culture, Philosophy, etc.
9	SE – Society & Enterprise	Includes projects and courses in Media, Industrial Engineering, Management, Finance, etc.
10	PR – Projects	Includes third year and final year projects

CURRICULUM

Semester 1						
	Code	Course	L	T	P	Credits
1	MA 101	Mathematics – I	4	2	0	5
2	PH 101	Physics – I	4	2	2	6
3	EE 101	Basic Electrical Engineering	2	1	2	3.5
4	ME 101	Introduction to Engineering Design	2	0	2	3
5	SE 101	Introduction to Society and Technology	1	1	0	1.5
6	HS 101	English and Humanities - I	1	2	0	2
7	HS 102	French language & Culture - I	0	2	0	0
		Total Credits				21
		Total contact hours	30			
Semester 2						
	Code	Course	L	T	P	Credits
1	MA 102	Mathematics – II	4	2	0	5
2	CB 101	Chemistry	4	2	2	6
3	EE 102	Electronics	2	1	2	3.5
4	ES 105	Introduction to Computer Science	2	0	2	3
5	ES 106	Media Project	1	1	0	1.5
6	ES 107	English and Humanities - II	1	2	0	2
7	HS 104	French language & Culture - II	0	2	0	0
						21
		Total contact hours	28			

Semester 3

	Code	Course	L	T	P	Credits
1	EE 211	Engineering Mathematics - III	3	1	0	3
2	EE 212	Linear Electronics	3	1	0	3
3	EE 213	Probability Theory	3	1	0	3
4	EE 214	Data Structures and Algorithms	3	2	0	3
5	EE 215	Electromagnetic Field Theory	3	1	0	3
6	EE 216	Basic Environmental Sciences and Engineering	3	1	0	3
7	EE 217	Linear Electronics Lab	0	0	3	1
8	EE 218	Electromagnetic Field Lab	0	0	3	1
9	EE 219	Electrical Workshop	0	0	2	1
10	EE 220	Design Thinking Lab	1	0	2	2
11	HS 206	French language & Culture - III	0	2	0	0
		Total Credits				23

Semester 4

	Code	Course	L	T	P	Credits
1	EE 221	Electrical Machines - I	3	1	0	3
2	EE 222	Basic and Modern Control Systems	3	1	0	3
3	EE 223	Solid State Devices	3	1	0	3
4	EE 224	Digital Electronics	3	1	0	3
5	EE 225	Signals and Systems	3	1	0	3
6	EE 226	Network Synthesis and Filter Design	3	1	0	3

7	EE 227	Electrical Machines - I Lab	0	0	3	1
8	EE 228	Network Synthesis and Filter Design Lab	0	0	3	1
9	EE 229	Digital Electronics Lab	0	0	3	1
10	EE 220	Signals and Systems Lab	0	0	3	1
11	HS 208	French Language & Culture - IV	0	2	0	0
		Total Credits				22
Semester 5						
	Code	Course	L	T	P	Credits
1	MA 305	Mathematics - V	3	1	0	4
2	ES 312	Introduction to Materials Sciences	2	0	2	3
3	EE 301	Microprocessors and Microcontrollers	2	1	2	4
4	EE 302	Communication Theory I	3	1	0	4
5	EE 306	Digital Signal Processing	2	1	0	3
6	EE 304	Power Electronics	2	1	0	3
7	EE 305	Experimental Lab I	0	0	2	1
8	SE 303	Introduction to Enterprise & Economy	2	1	0	3
9	HS 310	French Language & Culture - V	0	2	0	0
						25
		Total contact hours		30		
Semester 6						
	Code	Course	L	T	P	Credits
1	EE 307	Communication Theory II	3	1	0	4
2	EE 318	Computer Architecture and Design	3	0	0	3
3	EE 314	Power Systems	2	1	0	3
4	EE 315	VLSI Design	2	0	2	3

5	EE 316	Experimental Lab II	0	0	2	1
6	EE 317	Electrical Machines II (AC machines)	2	0	0	2
7	PR 301	Third Year team Project	0	0	6	3
8	E1	Elective - I	3	0	0	3
9	HS-E1	HSS + Mgmt. - Elective – I	2	0	0	2
10	HS 312	French Language & Culture - VI	0	2	0	0
						24
		Total contact hours	31			

Semester 7

	Code	Course	L	T	P	Credits
1	EE 401	Computer & Communication Networks	3	0	0	3
2	EE 408	Electromagnetic Waves	3	1	0	4
3	HS-E2	HSS + Mgmt. - Elective – II	2	0	0	2
4	E2	Elective – II	3	0	0	3
5	E3	Elective – III	3	0	0	3
6	PR 402	Year-4 Project	0	1	4	3
7	HS 401	Professional Ethics	0	1	0	1
8	HS 414	French Language & Culture - VII	0	2	0	0
						19
			13	5	6	
		Total contact hours	24			

Semester 8

	Code	Course	L	T	P	Credits
1	E4	Elective – IV	3	0	0	3

2	E5	Elective – V	3	0	0	3
3	PR 403	Year-4 Project	0	5	8	9
4	HS 416	French Language & Culture -VIII	0	2	0	0
						15
			6	5	8	
		Total contact hours	19			

List of Electives (semesters 6,7, and 8)

S.No.	Code	Course	L	T	P	Credits
1	EE 451	Information Theory and Coding	3	0	0	3
2	EE 452	Wireless Sensor Networks	3	0	0	3
3	EE 453	Mobile Communication	3	0	0	3
4	EE 454	Wireless Communication	3	0	0	3
5	EE 455	Radar Systems and Signal Processing	3	0	0	3
6	EE 456	Channel Coding Theory	3	0	0	3
7	EE 457	Software Defined Radio	3	0	0	3
8	EE 458	Advanced Communication Systems	3	0	0	3
9	EE 459	Optical Communication	3	0	0	3
10	EE 460	Design for Testability	3	0	0	3

11	EE 461	Solid State Devices	3	0	0	3
12	EE 462	VLSI Testing and Verification	3	0	0	3
13	EE 463	VLSI Signal Processing	3	0	0	3
14	EE 464	CAD for VLSI	3	0	0	3
15	EE 465	Passive Components in VLSI	3	0	0	3
16	EE 466	RFIC Design	3	0	0	3
17	EE 467	Low Power VLSI Design	3	0	0	3
18	EE 468	High Speed IC Design	3	0	0	3
19	EE 469	Advanced VLSI Design	3	0	0	3
20	EE 470	Adaptive signal Processing	3	0	0	3
21	EE 471	Digital Image Processing	3	0	0	3
22	EE 472	Computer Vision	3	0	0	3
23	EE 473	Advanced Digital Signal Processing	3	0	0	3
24	EE 474	Signal Processing for Remote Sensing Applications	3	0	0	3
25	EE 475	Biomedical Signal Processing	3	0	0	3
26	EE 476	Microwave Engineering	3	0	0	3
27	EE 477	Computational Electromagnetics	3	0	0	3
28	EE 478	Advanced Antennas	3	0	0	3
29	EE 479	Signal Integrity	3	0	0	3
30	EE 480	Neuroscience and Anatomy	3	0	0	3
31	EE 481	Neural Networks and Sensors	3	0	0	3
32	EE 482	Signal Processing in Neural Systems	3	0	0	3
33	EE 483	Brain Modeling and ANN	3	0	0	3
34	EE 484	Advanced Microprocessors	3	0	0	3
35	EE 485	IoT System Architecture and Design	3	0	0	3

36	EE 486	Sensors and Instrumentation	3	0	0	3
37	EE 487	High Performance Embedded Systems	3	0	0	3
38	EE 488	Renewable Energy Sources	3	0	0	3
39	EE 489	DC and AC Microgrids	3	0	0	3
40	EE 490	Advanced Electric Drives	3	0	0	3
41	EE 491	Advanced Power Electronics	3	0	0	3
42	EE 492	Advanced Power Systems	3	0	0	3
43	EE 493	Control for Power Electronics	3	0	0	3
44	EE 494	Digital Control of Power Electronics and Electric Drives	3	0	0	3
45	EE 495	Switchgear and Protection	3	0	0	3
46	CS 313	Machine Learning	2	0	2	3
47	CS 451	Embedded Systems	3	0	0	3
48	CS 452	Advanced Data Analytics	3	0	0	3
49	CS 453	Mobile Communication and Computing	3	0	0	3
50	CS 454	VLSI Design Using Verilog	3	0	0	3
51	CS 455	Advanced Computer Networks	3	0	0	3
52	CS 457	Deep Learning	3	0	0	3
53	CS 459	Cloud Computing	3	0	0	3
54	CS 460	Object Oriented Programming	3	0	0	3
55	CS 461	High Performance Computing	3	0	0	3
56	ME 452	Introduction to Operations Research	3	0	0	3
57	ME 460	Alternative Energy Sources	3	0	0	3
58	ME 467	Introduction to Robotics	3	0	0	3
59	ME 469	Computational Fluid Dynamics	3	0	0	3

60	ME 470	Robotics: Dynamics and Control	3	0	0	3
61	MA 450	Numerical Linear Algebra	3	0	0	3
62	MA 451	Meshfree Methods	3	0	0	3
63	MA 452	Boundary Element Method and Boundary Integral Equations	3	0	0	3
64	MA 453	PDE Based Image Processing	3	0	0	3
65	MA 454	Topology and Operator Theory	3	0	0	3
66	MA 455	Infinite dimensional Control Theory	3	0	0	3
67	MA 456	Bayesian Statistics	3	0	0	3
68	MA 457	Financial Mathematics	3	0	0	3
69	MA 458	Non-linear Conservation Laws and Applications	3	0	0	3

List of HS Electives (for semesters 5,6, and 7):

S. No.	Code	Course	L	T	P	Credits
1	HS 500	Selections from World Literature	2	0	0	2

2	HS 501	Business Communication	2	0	0	2
3	HS 502	Visual Story Telling	2	0	0	2
4	HS 503	Introduction to Culture Studies	2	0	0	2
5	HS 504	Literature and Visual Arts	2	0	0	2
6	HS 505	Cinema and Philosophy	2	0	0	2
7	HS 506	The Humanities for a Critical Understanding of the World	2	0	0	2
8	HS 507	Academic Writing	2	0	0	2
9	HS 508	Urban Studies: Reading the City	2	0	0	2
10	HS 509	Contemporary Shakespeare: Readings and Adaptations	2	0	0	2
11	HS 510	Philosophical Arguments	2	0	0	2