

# Mahindra École Centrale

Bahadurpally, Hyderabad 500043

## ACADEMIC REGULATIONS FOR FOUR-YEAR UNDERGRADUATE DEGREE PROGRAMS

(Applicable to students joining in the Academic Year 2017-18 and onwards)

### COURSE CATEGORIES

S. No.	Category	Description
1	CH – Chemistry	Courses in Chemistry.
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	EE 111	Engineering Mathematics - I	3	1	0	3
2	EE 112	Chemistry for Electrical Engineering	3	1	0	3
3	EE 113	Basic Electrical Engineering	3	1	0	3
4	EE 114	Engineering Economics and Management	3	1	0	3
5	EE 115	Engineering Drawing	1	0	3	3
6	EE 116	Chemistry Lab	0	0	3	1
7	EE 117	Basic Electrical Engineering Lab	0	0	3	1
8	EE 118	Workshop Practice	1	0	3	2
9	HS 102	French language & Culture - I	0	2	0	0
		Total Credits				<b>19</b>
		Total contact hours		32		
Semester 2						
	Code	Course	L	T	P	Credits
1	EE 121	Engineering Mathematics - II	3	1	0	3
2	EE 122	Physics for Electrical Engineering	3	1	0	3
3	EE 123	Basic Electronics Engineering	3	1	0	3
4	EE 124	Introduction to Computer Science	3	1	0	3
5	EE 125	Communication Skill	3	1	0	3
6	EE 126	Physics Lab	0	0	3	1
7	EE 127	Basic Electronics Engineering Lab	0	0	3	1
8	EE 128	Communication Skill Lab	0	0	3	1
9	EE 129	Introduction to Computer Science Lab	0	0	3	1

10	EE 120	Media Project	1	0	3	2
11	HS 104	French language & Culture - II	0	2	0	0
		Total Credits				<b>21</b>
		Total contact hours	38			
<b>Semester 3</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	MA 203	Mathematics - III	3	1	0	4
2	PH 202	Physics - II	3	1	2	5
3	ES 208	Mechanics	2	1	0	3
4	ES 209	Signals & Systems	2	1	2	4
5	ES 210	Data Structures	2	2	2	5
6	EE 201	Electromechanical Energy Conversion	2	1	2	4
7	HS 206	French language & Culture - III	0	2	0	0
		Total Credits				<b>25</b>
		Total contact hours	31			
<b>Semester 4</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	ES 211	Numerical Methods	3	0	2	4
2	EE 205	Digital Electronics	2	1	2	4
3	EE 206	Linear Electronics	3	1	2	5
4	EE 207	Digital Signal Processing	2	1	0	3
5	EE 210	Electromagnetism	2	1	0	3
6	SE 203	Design Thinking	1	0	2	2
7	ES 212	Earth and Environmental Sciences	2	0	0	2
8	HS 208	French Language & Culture - IV	0	2	0	0

		Total Credits				<b>24</b>
		Total contact hours	30			
<b>Semester 5</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	MA 304	Mathematics - IV	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 303	Network Systems and Control	3	1	0	4
6	EE 304	Power Electronics	2	1	0	3
7	EE 305	Experimental Lab I	0	0	2	1
8	HS-E1	HSS + Mgmt. - Elective – I	2	0	0	2
9	HS 310	French Language & Culture - V	0	2	0	0
		Total Credits				<b>25</b>
		Total contact hours	30			
<b>Semester 6</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
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 319	Electrodynamics	3	1	0	4
7	PR 301	Third Year Team Project	0	0	6	3
8	E1	Elective - I	3	0	0	3
9	HS-E2	HSS + Mgmt. - Elective – II	2	0	0	2
10	HS 312	French Language & Culture - VI	0	2	0	0
		Total Credits				<b>25</b>
		Total contact hours		33		
<b>Semester 7</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	EE 401	Computer & Communication Networks	3	0	0	3
2	HS-E3	HSS + Mgmt. - Elective - III	2	0	0	2
3	E2	Elective – II	3	0	0	3
4	E3	Elective – III	3	0	0	3
5	PR 402	Year-4 Project	0	1	4	3
6	HS 401	Professional Ethics	0	1	0	1
7	HS 414	French Language & Culture - VII	0	2	0	0
		Total Credits				<b>16</b>
		Total contact hours		19		
<b>Semester 8</b>						
	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	E4	Elective – IV	3	0	0	3
2	E5	Elective – V	3	0	0	3

3	PR 402	Year-4 Project	0	5	8	9
4	HS 416	French Language & Culture -VIII	0	2	0	0
		Total Credits				<b>15</b>
		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 DSP	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 Modelling 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	Data Mining	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	ME452	Introduction to Operations Research	3	0	0	3
57	ME460	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 Conservations Laws and Applications	3	0	0	3

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

<b>S. No.</b>	<b>Code</b>	<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
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