DEPARTMENT OF ELECTRICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code : **XXX M.Tech. (System and Control)**
Department : **Department of Electrical Engineering**
Year : **I**
Model : **2**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	EEC-541	Mathematics for Systems and Control	PCC	4	3	1	0	3	0
2.	EEC-543	Advanced Linear Control Systems	PCC	4	3	1	0	3	0
3.	EEC-545	Nonlinear Systems and Control	PCC	4	3	1	0	3	0
4.	EEC-547	Control System Design Laboratory	PCC	3	0	0	6	0	3
5.		Social Science Course	SSC	2	-	-	-	-	-
		Total		**17**					
Semester-II (Spring)									
1.		Program Elective-I	PEC	4	-	-	-	-	-
2.		Program Elective-II	PEC	4	-	-	-	-	-
3.		Program Elective-III	PEC	4	-	-	-	-	-
4.		Program Elective-IV	PEC	4	-	-	-	-	-
5.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
6.	EEC-700	Seminar	SEM	2	-	-	-	-	-
		Total		**21**					

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Program Code : **XXX M.Tech. (System and Control)**
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Year : **II**
Model : **2**

Teaching Scheme					**Contact Hours/Week**			**Exam Duration**	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	EEC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	EEC-701A	Thesis Stage-I	THESIS	10	-	-	-	-	-
		Total		**13**					
Semester-II (Spring)									
1.	EEC-701B	Thesis Stage-II	THESIS	14	-	-	-	-	-
		Total		**14**					

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	21	13	14
Total Credits	**65**			

M.Tech. (System and Control)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
1.	EEL-508	Machine Learning	PEC	4	3	1	0	3	0
2.	EEL-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	0
3.	EEL-682	Advanced Digital System Design	PEC	4	3	0	2	3	0
4.	EEL-683	Introduction to Robotics	PEC	4	3	1	0	3	0
5.	EEL-685	Stochastic Systems	PEC	4	3	1	0	3	0
6.	EEL-686	Optimal Control	PEC	4	3	1	0	3	0
7.	EEL-687	Operation Research	PEC	4	3	1	0	3	0
8.	EEL-688	Interval Control Systems	PEC	4	3	1	0	3	0
9.	EEL-689	Modeling and Simulation	PEC	4	3	1	0	3	0
10.	EEL-692	Graph Theory and Applications	PEC	4	3	1	0	3	0
11.	EEL-615	Robust Control	PEC	4	3	1	0	3	0
12.	EEL-694	Advances in Model Order Reduction Techniques	PEC	4	3	1	0	3	0
13.	EEL-696	Intelligent Control of Robotic Systems	PEC	4	3	0	2/2	3	0
14.	EEL-697	Dynamics and Control of Autonomous Vehicles	PEC	4	3	1	2/2	3	0
15.	EEL-525	Sampled-Data Systems	PEC	4	3	1	0	3	0
16.	EEL-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	0
17.	EEL-620	Process Instrumentation and Control	PEC	4	3	0	2	3	0
18.	EEL-526	Set-Theoretic Methods in Control	PEC	4	3	1	0	3	0
19.	EEL-527	Behavioral Approach to Systems Theory	PEC	4	3	1	0	3	0
20.	EEL-528	Model Predictive Control	PEC	4	3	1	0	3	0
21.	EEL-529	Learning Based Control of Robotics	PEC	4	3	0	2/2	3	0
22.	EEL-530	Advances in PID Controller and its Applications	PEC	4	3	1	2/2	3	0
23.	EEL-531	Data driven methods in Control	PEC	4	3	1	0	3	0

M.Tech. (System and Control)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
24.	EEL-532	Data Structure and its Applications	PEC	4	3	0	2	3	0
25.	EEL-684	System Reliability	PEC	4	3	1	0	3	0
26.	EEL-533	Advanced Microprocessor and Applications	PEC	4	3	0	2	3	0

Science, Technology, and Advanced Research-tools Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	EET-504	Data Structures	STAR	3	2	0	2	3	0
2.	EET-505	Programming in C++	STAR	3	2	0	2	3	0
3.	EET-506	Reinforcement Learning based Control System Design	STAR	3	2	1	0	3	0
4.	EET-507	Control Theory and its Applications in Renewable Energy Systems	STAR	3	2	1	0	3	0
5.	EET-508	Advanced Robotics	STAR	3	2	0	2	3	0
6.	EET-509	Embedded System Design using FPGA	STAR	3	2	0	2	2	0

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Program Code : **XXX Master of Science (by Research) in System and Control**
Department : **Department of Electrical Engineering**
Year : **I**
Model : **3**

Teaching Scheme					**Contact Hours/Week**			**Exam Duration**	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	EEC-541	Mathematics for Systems and Control	PCC	4	3	1	0	3	0
2.	EEC-543	Advanced Linear Control Systems	PCC	4	3	1	0	3	0
3.	EEC-545	Nonlinear Systems and Control	PCC	4	3	1	0	3	0
4.	EEC-547	Control System Design Laboratory	PCC	3	0	0	6	0	3
5.		Social Science Course	SSC	2	-	-	-	-	-
		Total		**17**					
Semester-II (Spring)									
1.		Program Elective-I	PEC	4	-	-	-	-	-
2.	EEC-751A	Thesis Stage-I	THESIS	14	-	-	-	-	-
		Total		**18**					

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Program Code : **XXX Master of Science (by Research) in System and Control**
Department : **Department of Electrical Engineering**
Year : **II**
Model : **3**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	**Subject Code**	**Course Title**	**Subject Area**	**Credits**	**L**	**T**	**P**	**Theory**	**Practical**
Semester-I (Autumn)									
1.	EEC-751B	Thesis Stage-II	THESIS	15	-	-	-	-	-
		Total		**15**					
Semester-II (Spring)									
1.	EEC-751C	Thesis Stage-III	THESIS	16	-	-	-	-	-
		Total		**16**					

Summary				
Semester	**1**	**2**	**3**	**4**
Semester-wise Total Credits	17	18	15	16
Total Credits	**66**			

Master of Science (by Research) in System and Control

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	EEL-508	Machine Learning	PEC	4	3	1	0	3	0
2.	EEL-681	Wide Area System Monitoring Control	PEC	4	3	1	0	3	0
3.	EEL-682	Advanced Digital System Design	PEC	4	3	0	2	3	0
4.	EEL-683	Introduction to Robotics	PEC	4	3	1	0	3	0
5.	EEL-685	Stochastic Systems	PEC	4	3	1	0	3	0
6.	EEL-686	Optimal Control	PEC	4	3	1	0	3	0
7.	EEL-687	Operation Research	PEC	4	3	1	0	3	0
8.	EEL-688	Interval Control Systems	PEC	4	3	1	0	3	0
9.	EEL-689	Modeling and Simulation	PEC	4	3	1	0	3	0
10.	EEL-692	Graph Theory and Applications	PEC	4	3	1	0	3	0
11.	EEL-615	Robust Control	PEC	4	3	1	0	3	0
12.	EEL-694	Advances in Model Order Reduction Techniques	PEC	4	3	1	0	3	0
13.	EEL-696	Intelligent Control of Robotic Systems	PEC	4	3	0	2/2	3	0
14.	EEL-697	Dynamics and Control of Autonomous Vehicles	PEC	4	3	1	2/2	3	0
15.	EEL-525	Sampled-Data Systems	PEC	4	3	1	0	3	0
16.	EEL-613	Sliding Mode Control and Observation	PEC	4	3	1	0	3	0
17.	EEL-620	Process Instrumentation and Control	PEC	4	3	0	2	3	0
18.	EEL-526	Set-Theoretic Methods in Control	PEC	4	3	1	0	3	0
19.	EEL-527	Behavioral Approach to Systems Theory	PEC	4	3	1	0	3	0
20.	EEL-528	Model Predictive Control	PEC	4	3	1	0	3	0
21.	EEL-529	Learning Based Control of Robotics	PEC	4	3	0	2/2	3	0
22.	EEL-530	Advances in PID Controller and its Applications	PEC	4	3	1	2/2	3	0
23.	EEL-531	Data driven methods in Control	PEC	4	3	1	0	3	0
24.	EEL-532	Data Structure and its Applications	PEC	4	3	0	2	3	0

Master of Science (by Research) in System and Control

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
25.	EEL-684	System Reliability	PEC	4	3	1	0	3	0
26.	EEL-533	Advanced Microprocessor and Applications	PEC	4	3	0	2	3	0