Proposed List of Online Courses for the PG Programs under Electrical Engineering Sciences Board

1. Communication Systems (LCS)

Sl. No.	NPTEL Course Code	Name of the Subject	Subject matter Expert's name	Course Duration in weeks
1	noc23-ee31	Digital Signal Processing and its Applications	Prof. V. M. Gadre	12
2	noc23-ee75	Spread Spectrum Communications And Jamming	Prof. Debarati Sen	12
3	noc23-ee74	Analog Circuits And Systems Through SPICE Simulation	Prof. Mrigank Sharad	12
4	noc23-cs09	Artificial Intelligence: Knowledge Representation And Reasoning	Prof. Deepak Khemani	12
5	noc23-cs08	Data Analytics with Python	Prof. A. Ramesh	12
6	noc23-cs24	Deep Learning - IIT Ropar	Prof. Sudarshan Iyengar	12
7	noc23-cs45	Natural Language Processing	Prof. Pawan Goyal	12
8	noc23-cs47	Blockchain and its Applications	Prof. Sandip Chakraborty Prof. Shamik Sural	12
9	noc23-cs56	Deep Learning	Prof. Prabir Kumar Biswas	12
10	noc23-cs61	GPU Architectures And Programming	Prof. Soumyajit Dey	12
11	noc23-ma04	Probabilistic Methods in PDE	Prof. Anindya Goswami	12
12	noc23-ma36	Scientific Computing using Matlab	Prof. Mani Mehra Prof. Vivek K. Aggarwal	12
13	noc23-ee21	Fuzzy Sets, Logic and Systems & Applications	Prof. Nishchal Kumar Verma	12
14	noc23-ee28	Multirate DSP	Prof. R. David Koilpillai	12
15	noc23-ee32	Foundations of Wavelets and Multirate Digital Signal Processing	Prof. V. M. Gadre	12

2. Digital Communication and Networking (LDN)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1	Quantum Algorithms and Cryptography	Prof. Shweta Agrawal	12	IITM
2	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
3	An Introduction to Artificial Intelligence	Prof. Mausam	12	IITD
4	The Joy of Computing using Python	Prof. Sudarshan Iyengar	12	IIT Ropar
5	Advanced Computer Network	Prof. Neminath Hubballi Prof. Sameer Kulkarni	12	IIT Indore IIT Gandhi nagar
6	Computer Networks And Internet Protocol	Prof. Soumya Kanti Ghosh	12	IITKGP
7	Introduction To Internet Of Things	Prof. Sudip Misra	12	IITKGP
8	Embedded Systems Design	Prof. Anupam Basu	12	IITKGP
9	Programming In Java	Prof. Debasis Samanta	12	IITKGP
10	Ethical Hacking	Prof. Indranil Sengupta	12	IITKGP
11	Foundations of Cryptography	Prof. Ashish Choudhury	12	IIIT Bangalore
12	Principles of Digital Communications	Prof. Abhishek Dixit	12	IITD
13	Optical Wireless Communications for Beyond 5G Networks and IoT	Prof. Anand Srivastava	12	IIITD
14	Spread Spectrum Communications And Jamming	Prof. Debarati Sen	12	IITKGP
15	Communication Networks	Prof. Gautam Das	12	IITKGP
16	Introduction On Intellectual Property To Engineers	Prof. Tapas Kumar Bandyopadhyay	8	IITKGP
17	Soft Skill Development	Prof. Priyadarshi Patnaik Prof. V. N. Giri Prof. D. Suar	8	IITKGP
18	Evolution Of Air Interface Towards 5G	Prof. Suvra Sekhar Das	8	IITKGP
19	Fundamentals Of MIMO Wireless Communication	Prof. Suvra Sekhar Das	8	IITKGP

3. Digital Electronics & Communication (LEC)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1	Programming, Data Structures And Algorithms Using Python	Prof. Madhavan Mukund	8	IITM
2	Advanced Graph Theory	Prof. Rajiv Misra	8	IITK
3	Introduction To Soft Computing	Prof. Debasis Samanta	8	IITKGP
4	Analog Ic Design	Prof. Aniruddhan.S	12	IITM
5	Digital IC Design	Prof. Janakiraman	12	IITM
6	Design of Power Electronic Converters	Prof. Shabari Nath	8	IITG
7	Design and Analysis of VLSI Subsystems	Prof. A. N. Rajagopalan	12	IITM
8	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	8	IITKGP
9	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
10	An Introduction to Artificial Intelligence	Prof. Mausam	12	IITD
11	The Joy of Computing using Python	Prof. Sudarshan Iyengar	12	IIT Ropar
12	Introduction To Internet Of Things	Prof. Sudip Misra	12	IITKGP
13	Programming In Java	Prof. Debasis Samanta	12	IITKGP
14	Introduction On Intellectual Property To Engineers And	Prof. Tapas Kumar Bandyopadhyay	8	IITKGP
15	Evolution Of Air Interface Towards 5G	Prof. Suvra Sekhar Das	8	IITKGP
16	Fundamentals Of MIMO Wireless Communication	Prof. Suvra Sekhar Das	8	IITKGP

4. Digital Electronics & Communication Systems (LDS)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1	Programming, Data Structures And Algorithms Using Python	Prof. Madhavan Mukund	8	IITM
2	Advanced Graph Theory	Prof. Rajiv Misra	8	IITK
3	Introduction To Soft Computing	Prof. Debasis Samanta	8	IITKGP
4	Analog Ic Design	Prof. Aniruddhan.S	12	IITM
5	Digital IC Design	Prof. Janakiraman	12	IITM
6	Design of Power Electronic Converters	Prof. Shabari Nath	8	IITG
7	Design and Analysis of VLSI Subsystems	Prof. A. N. Rajagopalan	12	IITM
8	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	8	IITKGP
9	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
10	An Introduction to Artificial Intelligence	Prof. Mausam	12	IITD
11	The Joy of Computing using Python	Prof. Sudarshan Iyengar	12	IIT Ropar
12	Introduction To Internet Of Things	Prof. Sudip Misra	12	IITKGP
13	Programming In Java	Prof. Debasis Samanta	12	IITKGP
14	Introduction On Intellectual Property To Engineers And	Prof. Tapas Kumar Bandyopadhyay	8	IITKGP
15	Evolution Of Air Interface Towards 5G	Prof. Suvra Sekhar Das	8	IITKGP
16	Fundamentals Of MIMO Wireless Communication	Prof. Suvra Sekhar Das	8	IITKGP

5. Digital Electronics (LDE)

Sl. No.	NPTEL Course ID	Name of the Subject	Subject matter Expert's name	Course Duration in weeks
1	noc23-ee11	Digital IC Design	Prof. Janakiraman	12
2	noc23-ee73	Communication Networks	Prof. Gautam Das	12
3	noc23-cs09	Artificial Intelligence: Knowledge Representation And Reasoning	Prof. Deepak Khemani	12
4	noc23-cs24	Deep Learning - IIT Ropar	Prof. Sudarshan Iyengar	12
5	noc23-cs45	Natural Language Processing	Prof. Pawan Goyal	12
6	noc23-cs47	Blockchain and its Applications	Prof. Sandip Chakraborty Prof. Shamik Sural	12
7	noc23-cs56	Deep Learning	Prof. Prabir Kumar Biswas	12
8	noc23-cs61	Programming	Prof. Soumyajit Dey	12
9	noc23-ma24	Probability And Statistics	Prof. Somesh Kumar	12
10	noc23-ee21	Fuzzy Sets, Logic and Systems & Applications	Prof. Nishchal Kumar Verma	12
11	noc23-ee28	Multirate DSP	Prof. R. David Koilpillai	12
12	noc23-ee56	Industrial Automation And Control	Prof. Alokkanti Deb	12

6. Electronics (LEL)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1.	Discrete Time Signal Processing	Prof Mrityunjoy	8 Weeks	IITKGP
2.	VLSI Signal Processing	Prof Mrityunjoy	8 Weeks	IITKGP
3.	Design and Analysis of VLSI Subsystems	Prof. Madhav Rao	12 Weeks	IIIT Bangalore
4.	Circuit Analysis for Analog Designers	Prof. Shanthi Pavan	12 Weeks	IITM
5.	Semiconductor device modeling and Simulation	Prof. Vivek Dixit	12 Weeks	IITKGP
6.	Digital System Design	Prof. Neeraj Goel	12 Weeks	IIT Ropar
7.	Electronics equipment integration and Prototype building	Prof. N.V.Chalapathi Rao	8 Weeks	IISc
8.	Microwave Integrated Circuits	Prof. Jayanta Mukherjee	8 Weeks	IITB
9.	Digital IC Design	Prof. Janakiraman	12 Weeks	IITM
10.	Deep Learning - IIT Ropar	Prof. Sudarshan Iyengar	12 Weeks	IIT Ropar
11.	Programming, Data Structures And Algorithms Using Python	Prof. Madhavan Mukund	8 Weeks	CMI

7. Industrial Electronics (LIE)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
2	Data Analytics with Python	Prof. A. Ramesh	12	IITR
3	Data Science for Engineers	Prof. Ragunathan Rengasamy, Prof. Shankar Narasimhan	8	IITM
4	Usability Engineering	Prof. Debayan Dhar	12	IITG
5	CMOS Digital VLSI Design	Prof. Sudeb Dasgupta	8	IITR
6	Control engineering	Prof. Ramkrishna.P	12	IITM
7	Optimal control	Prof. Barjeev Tyagi	8	IITR
8	Electronics equipment integration and Prototype building	Prof. N.V.Chalapathi Rao	8	IISc
9	Semiconductor device modeling and Simulation	Prof. Vivek Dixit	12	IITKGP
10	Strategic Performance Management	Prof. Kbl Srivastava	8	IITKGP
11	Patent Law for Engineers and Scientists	Prof. Feroz Ali	12	IITM
12	Data Analysis and Decision Making - I	Prof. Raghu Nandan Sengupta	12	IITK
13	Business analytics and data mining Modeling using R	Prof. Gaurav Dixit	12	IITR
14	Ethics In Engineering Practice	Prof. Susmita Mukhopadhyay	8	IITKGP

8. Signal Processing (LSP)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1	Biomechanics	Prof. Varadhan	12 Weeks	IITM
2	Digital Signal Processing	Prof. C.S.Ramalingam	12 Weeks	IITKGP
3	Biomedical Signal Processing	Prof. Sudipta Mukhopadhyay	12 Weeks	IITKGP
4	Biophotonics	Prof. Basudev Lahiri	12 Weeks	IITKGP
5	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	8 Weeks	IITM
6	Modern Computer Vision	Prof. A. N. Rajagopalan	12 Weeks	IITM
7	Multirate DSP	Prof. R. David Koilpillai	12 Weeks	IITK
8	Principles of Signals and Systems	Prof. Aditya Jagannatham	12 Weeks	IITM
9	Signals and Systems	Prof. Hitesh Shrimali Prof. Kushal K. Shah	12 Weeks	IITKGP
10	Introduction To Internet Of Things	Prof. Sudip Misra	12 Weeks	IITKGP
11	Deep Learning	Prof. Prabir Kumar Biswas	12 Weeks	IITM
12	Soft Skill Development	Prof Priyadarshi Patnaik Prof V N Giri Prof D Suar	12 Weeks	IITKGP

9 .VLSI Design and Embedded Systems (LVS)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1.	Design and Analysis of VLSI Subsystems	by Prof. Madhav Rao	12 Weeks	IIIT Bangalore
2.	Blockchain and its Applications	by Prof. Sandip Chakraborty	12 Weeks	IITKGP
3.	Advanced Computer Networks	by Prof. Neminath Hubballi ,Prof. Sameer Kulkarni	12 Weeks	IIT Indore IIT Gandhi nagar
4.	Biomedical Signal Processing	by Prof. Sudipta Mukhopadhyay	12 Weeks	IIT Kharagpur
5.	Data Science For Engineers	by Prof. Ragunathan Rengasamy Prof. Shankar Narasimhan	8 Weeks	IIT Madras
6.	Deep Learning	by Prof. Sudarshan Iyengar Prof. Sanatan Sukhija	12 Weeks	IIT Ropar
7.	Embedded Systems Design	by Prof. Anupam Basu	12 Weeks	IIT Kharagpur
8.	Social Networks	by Prof. Sudarshan Iyengar Prof. Yayati Gupta	12 Weeks	IIT Ropar
9.	Synthesis Of Digital Systems	by Prof. Preeti Ranjan Panda	12 Weeks	IIT Delhi
10.	Semiconductor device modeling and Simulation	by Prof. Vivek Dixit	12 Weeks	IIT Ropar
11.	mming, Data Structures And Algorithms Using Python	by Prof. Madhavan Mukund	8 Weeks	CMI

9a .VLSI Design and Embedded Systems (LVI)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1	C-Based VLSI Design	Prof. Chandan Karfa	12	IIT Guwahati
2	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	8	IITKGP
3	Advanced Computer Architecture	Prof. Smruti R.Sarangi	12	IITD
4	Hardware Security	Prof. Debdeep Mukhopadhyay	12	IITKGP
5	GPU Architectures And Programming	Prof. Soumyajit Dey	12	IITKGP
6	Design and Analysis of VLSI Subsystems	Prof. Madhav Rao	12	IIIT Bangalore
7	Blockchain and its Applications	Prof. Sandip Chakraborty Prof. Shamik Sural	12	IITKGP
8	Advanced Computer Networks	Prof. Neminath Hubballi Prof. Sameer Kulkarni	12	IIT Indore IIT Gandhi
9	Biomedical Signal Processing	Prof. Sudipta Mukhopadhyay	12	IIT Kharagpur
10	Data Science For Engineers	Prof. Ragunathan Rengasamy Prof. Shankar Narasimhan	8	IIT Madras
11	Deep Learning	Prof. Sudarshan Iyengar Prof. Sanatan Sukhija	12	IIT Ropar
12	Embedded Systems Design	Prof. Anupam Basu	12	IIT Kharagpur
13	Social Networks	Prof. Sudarshan Iyengar Prof. Yayati Gupta	12	IIT Ropar
14	Synthesis Of Digital Systems	Prof. Preeti Ranjan Panda	12	IIT Delhi

10. Power System Engineering (EPS)

Sl.No.	Course Name	SME Name	Institute	Co-ordinating Institute	Duration
1	Electromagnetic Waves in Guided and Wireless Media	Prof. Pradeep Kumar K	IITK	IITK	8 Weeks
2	Fundamental of Power Electronics	Prof. L.Umanand	IISc	IISc	12 Weeks
3	Transmission lines and electromagnetic waves	Prof. Ananth Krishnan	IITM	IITM	12 Weeks
4	Fuzzy Sets, Logic and Systems & Applications	Prof. Nishchal Kumar Verma	IITK	IITK	12 Weeks
5	Optimal control	Prof. Barjeev Tyagi	IITR	IITR	8 Weeks
6	Electronics equipment integration and Prototype building	Prof. N.V.Chalapathi Rao	IISc	IISc	8 Weeks
7	Architectural Design of Digital Integrated Circuits	Prof. Indranil Hatai	IIEST Shibpur	IITKGP	12 Weeks
8	Power Quality Improvement Technique	Prof. Avik Bhattacharya	IITR	IITR	8 Weeks
9	Multirate DSP	Prof. R. David Koilpillai	IITM	IITM	12 Weeks
10	Stochastic Modeling and the Theory of Queues	Prof. Krishna Jagannathan	IITM	IITM	12 Weeks
11	Digital Signal Processing and its Applications	Prof. V. M. Gadre	IITB	IITB	12 Weeks
12	Foundations of Wavelets and Multirate Digital Signal Processing	Prof. V. M. Gadre	IITB	IITB	4 Weeks
13	Circuit Analysis for Analog Designers	Prof. Shanthi Pavan	IITM	IITM	12 Weeks
14	Semiconductor device modeling and Simulation	Prof. Vivek Dixit	IITKGP	IITKGP	12 Weeks
15	Operation and Planning of Power Distribution Systems	Prof. Sanjib Ganguly	IITG	IITG	12 Weeks
16	Design of Power Electronic Converters	Prof. Shabari Nath	IITG	IITG	8 Weeks
17	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	IITKGP	IITKGP	8 Weeks
18	Biomedical Signal Processing	Prof. Sudipta Mukhopadhyay	IITKGP	IITKGP	12 Weeks

19	Digital Electronic Circuits	Prof. Goutam Saha	IITKGP	IITKGP	12 Weeks
20	Power System Dynamics, Control and Monitoring	Prof. Debapriya Das	IITKGP	IITKGP	12 Weeks
21	Industrial Automation And Control	Prof. Alokkanti Deb	IITKGP	IITKGP	12 Weeks
22	Facts Devices	Prof. Avik Bhattacharya	IITR	IITR	8 Weeks
23	Digital Protection of Power System	Prof. Bhaveshkumar R. Bhalja	IITR	IITR	8 Weeks
24	Smart Grid: Basics to Advanced Technologies	Prof. N. P. Padhy Prof. Premlata Jena	IITR	IITR	12 Weeks (8 weeks + 4 weeks new)
25	Power Quality	Prof. Bhim Singh	IITD	IITD	12 Weeks
26	Op-Amp Practical Applications: Design, Simulation and Implementation	Prof. Hardik J Pandya	IISc	IISc	12 Weeks
27	Sensors and actuators	Prof. Hardik J Pandya	IISc	IISc	12 Weeks
28	Soft Skill Development	Prof. Priyadarshi Patnaik Prof. V. N. Giri Prof. D. Suar	IITKGP	IITKGP	8 Weeks
29	Introduction On Intellectual Property To Engineers And Technologists	Prof. Tapas Kumar Bandyopadhyay	IITKGP	IITKGP	8 Weeks
30	Patent Law for Engineers and Scientists	Prof. Feroz Ali	IITM	IITM	12 Weeks
31	Energy Resources, Economics and Environment	Prof. Rangan Banerjee	IITD	IITD	12 Weeks
32	Probabilistic Methods in PDE	Prof. Anindya Goswami	IISER Pune	IITM	12 Weeks
33	Probability And Statistics	Prof. Somesh Kumar	IITKGP	IITKGP	12 Weeks
34	Advanced Probability Theory	Prof. Niladri Chatterjee	IITD	IITD	12 Weeks
35	Non-conventional energy Resources	Prof. Prathap Haridoss	IITM	IITM	12 Weeks
36	Engineering Statistics	Prof. Manjesh Hanawal	IITB	IITB	12 Weeks
37	Introduction to Quantum Field Theory (Theory of Scalar Fields) - Part 2	Prof. Anurag Tripathi	IITH	IITM	12 Weeks
38	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre Prof. Badri N Subudhi	IITD	IITD	12 Weeks
39	Data Analytics with Python	Prof. A. Ramesh	IITR	IITR	12 Weeks
40	Artificial Intelligence: Knowledge Representation And Reasoning	Prof. Deepak Khemani	IITM	IITM	12 Weeks

41	Machine Learning,ML	Prof. Carl Gustaf Jansson	KTH Royal Institute of Technology	IITM	8 Weeks
42	Data Science for Engineers	Prof. Ragunathan Rengasamy Prof. Shankar Narasimhan	IITM	IITM	8 Weeks
43	Introduction to Machine Learning	Prof. Balaraman Ravindran	IITM	IITM	12 Weeks
44	Advanced Graph Theory	Prof. Rajiv Misra	IIT Patna	IITK	8 Weeks
45	Introduction To Soft Computing	Prof. Debasis Samanta	IITKGP	IITKGP	8 Weeks
46	Programming in Modern C++	Prof. Partha Pratim Das	IITKGP	IITKGP	12 Weeks
47	Introduction To Industry 4.0 And Industrial Internet Of Things	Prof. Sudip Misra	IITKGP	IITKGP	12 Weeks
48	Problem Solving Through Programming In C	Prof. Anupam Basu	IITKGP	IITKGP	12 Weeks

11. POWER ELECTRONICS (LPE)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
2	Data Analytics with Python	Prof. A. Ramesh	12	IITR
3	Data Science for Engineers	Prof. Ragunathan Rengasamy, Prof. Shankar Narasimhan	8	IITM
4	Usability Engineering	Prof. Debayan Dhar	12	IITG
5	CMOS Digital VLSI Design	Prof. Sudeb Dasgupta	8	IITR
6	Control engineering	Prof. Ramkrishna.P	12	IITM
7	Optimal control	Prof. Barjeev Tyagi	8	IITR
8	Electronics equipment integration and Prototype building	Prof. N.V.Chalapathi Rao	8	IISc
9	Semiconductor device modeling and Simulation	Prof. Vivek Dixit	12	IITKGP
10	Strategic Performance Management	Prof. Kbl Srivastava	8	IITKGP
11	Patent Law for Engineers and Scientists	Prof. Feroz Ali	12	IITM
12	Data Analysis and Decision Making - I	Prof. Raghu Nandan Sengupta	12	IITK
13	Business analytics and data mining Modeling using R	Prof. Gaurav Dixit	12	IITR
14	Ethics In Engineering Practice	Prof. Susmita Mukhopadhyay	8	IITKGP

13. Micro Electronics and Control Systems (LMS)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1.	Process Control - Design, Analysis and Assessment	Prof. Ragunathan Rengasamy	12 Weeks	IITM
2.	An Introduction to Artificial Intelligence	Prof. Mausam	12 Weeks	IITD
3.	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre Prof. Badri N Subudhi	12 Weeks	IITD
4.	Discrete Mathematics	Prof. Sudarshan Iyengar	12 Weeks	IIT Ropar
5.	Fundamentals of Automotive Systems	Prof. C. S. Shankar Ram	12 Weeks	IITM
6.	Fundamental of Power Electronics	Prof. L.Umanand	12 Weeks	IISc
7.	CMOS Digital VLSI Design	Prof. Sudeb Dasgupta	8 Weeks	IITR
8.	Linear Dynamical Systems	Prof. Tushar Jain	8 Weeks	IIT Mandi
9.	Control engineering	Prof. Ramkrishna.P	12 Weeks	IITM
10.	Fundamentals of semiconductor devices	Prof. Digbijoy N. Nath	12 Weeks	IISc
11.	Analog Circuits	Prof. Jayanta Mukherjee	8 Weeks	IITB
12.	Optimal control	Prof. Barjeev Tyagi	8 Weeks	IITR
13.	Digital Signal Processing and its Applications	Prof. V. M. Gadre	12 Weeks	IITB
14.	Semiconductor device modeling and Simulation	Prof. Vivek Dixit	12 Weeks	IITKGP
15.	Optical Engineering	Prof. Shanti Bhattacharya	12 Weeks	IITM
16.	Microprocessors And Microcontrollers	Prof. Santanu Chattopadhyay	12 Weeks	IITKGP
17.	Digital Electronic Circuits	Prof. Goutam Saha	12 Weeks	IITKGP
18.	Industrial Automation And Control	Prof. Alokkanti Deb	12 Weeks	IITKGP
19.	Sensors and actuators	Prof. Hardik J Pandya	12 Weeks	IISc
20.	Dynamical System and Control	Prof. N. Sukavanam Prof. D. N. Pandey	12 Weeks	IITR
21.	Advanced Engineering Mathematics	Prof. H S Mahato	12 Weeks	IITKGP
22.	Scientific Computing using Matlab	Prof. Mani Mehra Prof. Vivek K. Aggarwal	12 Weeks	IITD
23.	Automatic Control	Prof. Anil Kumar	8 Weeks	IITR
24.	Modelling and Simulation of Dynamic Systems	Prof. Pushparaj Mani Pathak	8 Weeks	IITR

14. Energy System Engineering (ESE)

Sl.No.	Course Name	SME Name	Institute	Co-ordinating Institute	Duration
1	Non-Conventional Energy Resources	Prof. Prathap Haridoss	IIT MADRAS	IIT MADRAS	12 Weeks
2	Physics Of Renewable Energy Systems	Prof. Amreesh Chandra	IIT KHARAGPUR	IIT KHARAGPUR	12 Weeks
3	Solar Energy Engineering And Technology	Prof. Pankaj Kalita	IIT GUWAHATI	IIT GUWAHATI	12 Weeks
4	Energy Economics And Policy	Prof. Shyamasree Dasgupta	IIT MANDI	IIT MANDI	8 Weeks
5	Ntroduction Micro And Nano Scale Energy Transport	Prof. Aravinda Pattamatta	IIT MADRAS	IIT MADRAS	12 Weeks
6	Energy Resources, Economics And Environment	Prof. Rangan Banerjee	IIT BOMBAY	IIT BOMBAY	12 Weeks
7	Material And Energy Balances	Prof. Vignesh Muthuvijayan	IIT MADRAS	IIT MADRAS	12 Weeks
8	Selection Of Nanomaterials For Energy Harvesting And Storage Applications	Prof.Kaushik Pal	IIT ROORKEE	IIT ROORKEE	12 Weeks
9	Design of Power Electronic Converters	Prof. Shabari Nath	IITG	IITG	8 Weeks
10	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	IITKGP	IITKGP	8 Weeks
11	Digital Electronic Circuits	Prof. Goutam Saha	IITKGP	IITKGP	12 Weeks
12	Power System Dynamics, Control and Monitoring	Prof. Debapriya Das	IITKGP	IITKGP	12 Weeks
13	Industrial Automation And Control	Prof. Alokkanti Deb	IITKGP	IITKGP	12 Weeks
14	Facts Devices	Prof. Avik Bhattacharya	IITR	IITR	8 Weeks
15	Digital Protection of Power System	Prof. Bhaveshkumar R. Bhalja	IITR	IITR	8 Weeks
16	Smart Grid: Basics to Advanced Technologies	Prof. N. P. Padhy Prof. Premlata Jena	IITR	IITR	12 Weeks
17	Power Quality	Prof. Bhim Singh	IITD	IITD	12 Weeks

18	Op-Amp Practical Applications: Design, Simulation and Implementation	Prof. Hardik J Pandya	IISc	IISc	12 Weeks
19	Sensors and actuators	Prof. Hardik J Pandya	IISc	IISc	12 Weeks
20	Soft Skill Development	Prof. Priyadarshi Patnaik Prof. V. N. Giri Prof. D. Suar	IITKGP	IITKGP	8 Weeks
21	Introduction On Intellectual Property To Engineers And Technologists	Prof. Tapas Kumar Bandyopadhyay	IITKGP	IITKGP	8 Weeks
22	Patent Law for Engineers and Scientists	Prof. Feroz Ali	IITM	IITM	12 Weeks
23	Energy Resources, Economics and Environment	Prof. Rangan Banerjee	IITD	IITD	12 Weeks
24	Probabilistic Methods in PDE	Prof. Anindya Goswami	IISER Pune	IITM	12 Weeks
25	Probability And Statistics	Prof. Somesh Kumar	IITKGP	IITKGP	12 Weeks
26	Advanced Probability Theory	Prof. Niladri Chatterjee	IITD	IITD	12 Weeks
27	Non-conventional energy Resources	Prof. Prathap Haridoss	IITM	IITM	12 Weeks
28	Engineering Statistics	Prof. Manjesh Hanawal	IITB	IITB	12 Weeks
29	Introduction to Quantum Field Theory (Theory of Scalar Fields) - Part 2	Prof. Anurag Tripathi	IITH	IITM	12 Weeks
30	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre Prof. Badri N Subudhi	IITD	IITD	12 Weeks
31	Data Analytics with Python	Prof. A. Ramesh	IITR	IITR	12 Weeks
32	Artificial Intelligence: Knowledge Representation And Reasoning	Prof. Deepak Khemani	IITM	IITM	12 Weeks
33	Machine Learning	Prof. Carl Gustaf Jansson	KTH Royal Institute of Technology	IITM	8 Weeks
34	Data Science for Engineers	Prof. Ragunathan Rengasamy Prof. Shankar Narasimhan	IITM	IITM	8 Weeks

35	Introduction to Machine Learning	Prof. Balaraman Ravindran	IITM	IITM	12 Weeks
36	Advanced Graph Theory	Prof. Rajiv Misra	IIT Patna	IITK	8 Weeks
37	Introduction To Soft Computing	Prof. Debasis Samanta	IITKGP	IITKGP	8 Weeks
38	Programming in Modern C++	Prof. Partha Pratim Das	IITKGP	IITKGP	12 Weeks
39	Introduction To Industry 4.0 And Industrial Internet Of Things	Prof. Sudip Misra	IITKGP	IITKGP	12 Weeks
40	Problem Solving Through Programming In C	Prof. Anupam Basu	IITKGP	IITKGP	12 Weeks

15. Biomedical Signal Processing and Instrumentation (LBI)

Sl No.	Name of the Subject and Subject matter Expert's name	Resource Person	Course Duration in weeks	Institute
1	Biomechanics	Prof. Varadhan	12 Weeks	IITM
2	Digital Signal Processing	Prof. C.S.Ramalingam	12 Weeks	IITKGP
3	Biomedical Signal Processing	Prof. Sudipta Mukhopadhyay	12 Weeks	IITKGP
4	Biophotonics	Prof. Basudev Lahiri	12 Weeks	IITKGP
5	VLSI Signal Processing	Prof. Mrityunjoy Chakraborty	8 Weeks	IITM
6	Modern Computer Vision	Prof. A. N. Rajagopalan	12 Weeks	IITM
7	Multirate DSP	Prof. R. David Koilpillai	12 Weeks	IITK
8	Principles of Signals and Systems	Prof. Aditya Jagannatham	12 Weeks	IITM
9	Signals and Systems	Prof. Hitesh Shrimali Prof. Kushal K. Shah	12 Weeks	IITKGP
10	Introduction To Internet Of Things	Prof. Sudip Misra	12 Weeks	IITKGP
11	Deep Learning	Prof. Prabir Kumar Biswas	12 Weeks	IITM
12	Soft Skill Development	Prof Priyadarshi Patnaik Prof V N Giri Prof D Suar	12 Weeks	IITKGP

16. Digital Communication Engineering (DCE)

Sl. No.	Course Name	Resource Person	Course Duration in weeks	Institute
1	Quantum Algorithms and Cryptography	Prof. Shweta Agrawal	12	IITM
2	Introduction to Embedded System Design	Prof. Dhananjay V. Gadre, Prof. Badri N Subudhi	12	IITD
3	An Introduction to Artificial Intelligence	Prof. Mausam	12	IITD
4	The Joy of Computing using Python	Prof. Sudarshan Iyengar	12	IIT Ropar
5	Advanced Computer Network	Prof. Neminath Hubballi Prof. Sameer Kulkarni	12	IIT Indore IIT Gandhi nagar
6	Computer Networks And Internet Protocol	Prof. Soumya Kanti Ghosh	12	IITKGP
7	Introduction To Internet Of Things	Prof. Sudip Misra	12	IITKGP
8	Embedded Systems Design	Prof. Anupam Basu	12	IITKGP
9	Programming In Java	Prof. Debasis Samanta	12	IITKGP
10	Ethical Hacking	Prof. Indranil Sengupta	12	IITKGP
11	Foundations of Cryptography	Prof. Ashish Choudhury	12	IIIT Bangalore
12	Principles of Digital Communications	Prof. Abhishek Dixit	12	IITD
13	Optical Wireless Communications for Beyond 5G Networks and IoT	Prof. Anand Srivastava	12	IIITD
14	Spread Spectrum Communications And Jamming	Prof. Debarati Sen	12	IITKGP
15	Communication Networks	Prof. Gautam Das	12	IITKGP
16	Introduction On Intellectual Property To Engineers And	Prof. Tapas Kumar Bandyopadhyay	8	IITKGP
17	Soft Skill Development	Prof. Priyadarshi Patnaik Prof. V. N. Giri Prof. D. Suar	8	IITKGP
18	Evolution of Air Interface Towards 5G	Prof. Suvra Sekhar Das	8	IITKGP
19	Fundamentals of MIMO Wireless Communication	Prof. Suvra Sekhar Das	8	IITKGP