Electronics and Communication Engineering

Electronics and Communication Engineering department is offering **"Honours"** and **"Additional Minor Engineering"** degree under the following rules and eligibility criteria.

Students, who have taken admission on or after 2018-19 academic year, will be eligible to get Under Graduate Degree with **"Honours"** or **"Additional Minor Engineering",** if he/she completes an additional 20 credits through MOOCs/NPTEL/any other on-line courses apart from 160 academic credits.

INSTRUCTIONS FOR MINOR OR HONOURS DEGREE:

1. For **Additional Minor Engineering,** a student has to earn at least twenty (20) Additional credits from professional courses.

2. A Student can choose the courses which were not studied earlier in the previous semester. Further the courses should not be present in the curriculum of the forthcoming semesters.

3. For "Additional Minor Engineering", a student has to earn additional credits from their discipline.

4. Credits for 4 weeks course is-1, for 8 weeks course is-2, for 12 weeks courseis-3.

5. A student must ensure that he/she shall earn these additional credits beforethe completion of the regular course.

6. It is the student's responsibility for registering the courses through ONLINEand the required registration fee shall be borne by the respective student.

7. Students have to register for the courses with the approval of Head of theDepartment.

8. A student is eligible to opt either for **"Honours"** or **"Additional MinorEngineering",** **not eligible for the both**.

CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY(A)
Department of Electronics and Communication Engineering

NPTEL EQUIVALENT COURSES FOR MINOR DEGREE 2021-2022 (July-December)

Date: 17-05-2021

Additional Minor Engineering Degree In

I.   Communications and Networking
II.   Embedded Systems & IoT
III. Signal Processing
IV.   VLSI

Level	Credits
Basic	8 to 10 credits
Advanced	10 to 12 credits

Note: Student has to choose the courses at least from any two groups and from each group at most 2 courses only.

*-subject to approval, from the department

The Tentative list of courses for Additional Minor Degree approved by Electronics and communication Engineering Department BoS members are as follows:

NPTEL/ COURSERA EQUIVALENT COURSES

Sno	Course Code	Course Name	Institute	Credits	Duration	Start date	Exam date	Nptel/Coursera links
Communications and Networking								
Basic Level								
1	noc21-ee65	Principles of Communication Systems: Part - II	IITK	3	8 Weeks	July 26, 2021	September 17, 2021	https://nptel.ac.in/courses/108/104/108104098/
2	noc21-ee66	Introduction to Wireless and Cellular Communications	IITM	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/106/106/106106167/
3	noc21-ee72	Microwave Theory and Techniques	IITB	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/101/108101112/
4	noc21-ee74	Analog communication	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/117/105/117105143/
5	noc21-ee81	Optical Engineering	IITM	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/106/108106161/
6	noc21-ee83	Electromagnetic Theory	IITK	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108104087/
7	noc21-ee88	Microwave Engineering	IITG	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/103/108103141/
8	CN	Fundamentals of Network Communication	University of Colorado	1.25	5 Weeks	Considered from registered Date		https://www.coursera.org/learn/fundamentals-network-communications
Advanced Level								
1	noc21-ee64	Principles of Modern CDMA/ MIMO/ OFDM Wireless	IITK	2	8 Weeks	August 23, 2021	October 15, 2021	https://nptel.ac.in/courses/117/104/117104115/

		Communications						
2	noc21-ee82	Applied Electromagnetics For Engineers	IITK	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/104/108104099/
3	noc21-ee91	Computational Electromagnetics	IITM	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/106/108106152/
4	noc21-ee108	Principles and Techniques of Modern Radar Systems	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/105/108105154/
5	noc21-ee111	Advanced Microwave Guided-Structures and Analysis	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://onlinecourses.nptel.ac.in/noc21_ee111/preview
6	CN	Peer-to-Peer Protocols and Local Area Networks	University of Colorado	1.25	5 Weeks	Considered from registered Date		https://www.coursera.org/learn/peer-to-peer-protocols-local-area-networks
7	CN	Packet Switching Networks and Algorithms	University of Colorado	1.25	5 Weeks	Considered from registered Date		https://www.coursera.org/learn/packet-switching-networks-algorithms
8		TCP/IP and Advanced Topics	University of Colorado	1.25	5 Weeks	Considered from registered Date		https://www.coursera.org/learn/tcp-ip-advanced
Embedded Systems & IoT								
Basic Level								
1	noc21-ee85	Design for internet of things	IISc	2	8 Weeks	July 26, 2021	September 17, 2021	https://onlinecourses.nptel.ac.in/noc21_ee85/preview
2	20CSMIOT14	Introduction to internet of things	IITKGP	3	12 Weeks	July 26, 2021	October 24, 2021	https://onlinecourses.nptel.ac.in/noc21_cs63/preview
3	20CSMCS	Introduction to	IITKGP	3	12 Weeks	July 26, 2021	October 23, 2021	https://onlinecourses.nptel.ac.in/noc21_cs66/preview

	21	Industry 4.0 and Industrial Internet of Things						
4	20CSMIOT18	Introduction and programming with IoT Boards	Korea university	1.25	5 Weeks	-	-	https://www.coursera.org/learn/introduction-iot-boards
5	IOT	The Arduino Platform and C Programming	University of California	1	4 Weeks			https://www.coursera.org/learn/arduino-platform?specialization=iot
6	ML	Machine Learning Foundations: A Case Study Approach	University of Washington	1.5	6 Weeks			https://www.coursera.org/learn/ml-foundations?specialization=machine-learning

Advanced Level

1	20CSMIOT22:Security in IOT	Industrial IoT Markets and Security	Colorado boulder university	1.25	5 Weeks	-	-	https://www.coursera.org/learn/industrial-iot-markets-security
2	ECEA 5315	Real-Time Embedded Systems Concepts and Practices	University of Colorado Boulder	1	4 Weeks			https://www.coursera.org/learn/real-time-embedded-systems-concepts-practices?specialization=real-time-embedded-systems
3	ECEA 5316	Real-Time Embedded Systems Theory and Analysis	University of Colorado Boulder	1	4 Weeks			https://www.coursera.org/learn/real-time-embedded-theory-analysis?specialization=real-time-embedded-systems
4	ECEA 5317	Real-Time Mission-Critical Systems Design	University of Colorado Boulder	1	4 Weeks			https://www.coursera.org/learn/real-time-mission-critical-systems-design?specialization=real-time-embedded-systems
5	ECEA 5318	Real-Time Project for Embedded Systems	University of Colorado Boulder	1	4 Weeks			https://www.coursera.org/learn/real-time-project-embedded-systems?specialization=real-time-embedded-systems
6	ECEA 5340	Sensors and Sensor Circuit Design	University of Colorado	1.25	5 Weeks			https://www.coursera.org/learn/sensors-circuit-interface?specialization=embedding-sensors-motors

			Boulder				
7	ECEA 5342	Pressure, Force, Motion, and Humidity Sensors	University of Colorado Boulder	1.25	5 Weeks			https://www.coursera.org/learn/pressure-force-motion-humidity-sensors?specialization=embedding-sensors-motors
8	IOT	Interfacing with the Arduino	University of California	1	4 Weeks			https://www.coursera.org/learn/interface-with-arduino
9	IOT	The Raspberry Pi Platform and Python Programming for the Raspberry Pi	University of California	1	4 Weeks			https://www.coursera.org/learn/raspberry-pi-platform?specialization=iot
10	CC	Cloud Computing Concepts, Part 1	University of Illinois at Urbana-Champaign	1.25	5 Weeks			https://www.coursera.org/learn/cloud-computing?specialization=cloud-computing
11	CC	Cloud Computing Concepts, Part 2	University of Illinois at Urbana-Champaign	1.25	5 Weeks			https://www.coursera.org/learn/cloud-computing-2?specialization=cloud-computing
Signal Processing							
Basic Level							
1	noc21-ee78	Digital Image Processing	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/117/105/117105135/
2	noc21-ee100	Image Signal Processing	IITM	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/108/106/108106168/
3	noc21-ee95	Basics of software defined Radios and Practical Applications	IITM	1	4 Weeks	July 26, 2021	August 20, 2021	https://nptel.ac.in/courses/108107107/
Advanced Level							
2	noc21-ee79	Pattern Recognition and Application	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://nptel.ac.in/courses/117/105/117105101/
5	noc21-ee102	Signal Processing for	IITKGP	3	12 Weeks	July 26, 2021	October 15, 2021	https://onlinecourses.nptel.ac.in/noc21_ee102/preview

		mm Wave communication for 5G and beyond						

VLSI								

Basic Level

1	noc21-ee80	Semiconductor Devices and Circuits	IISc	3	12 Weeks	October 15, 2021	October 23, 2021	https://nptel.ac.in/courses/108/108/108108112/
2	noc21-ee86	Microelectronics: Devices To Circuits	IITR	3	12 Weeks	October 15, 2021	October 24, 2021	https://nptel.ac.in/courses/108/107/108107142/
3	noc21-ee89	Analog Electronic Circuits	IITD	3	12 Weeks	October 15, 2021	October 24, 2021	https://nptel.ac.in/courses/108/102/108102112/
4	noc21-ee90	Enclosure design of electronics equipment	IISc	3	12 Weeks	October 15, 2021	October 24, 2021	https://nptel.ac.in/courses/117108140/
5	noc21-ee59	Introduction to Semiconductor Devices	IIT Hyderabad	3	12 weeks	July 26, 2021	October 15, 2021	https://onlinecourses.nptel.ac.in/noc21_ee59/preview

Advanced Level

1	noc21-ee76	Millimeter Wave Technology	IITKGP	2	8 Weeks	September 17, 2021	September 26, 2021	https://nptel.ac.in/courses/117/105/117105139/
2	noc21-ee97	System Design Through VERILOG	IITG	2	8 Weeks	September 17, 2021	September 26, 2021	https://onlinecourses.nptel.ac.in/noc21_ee97/preview
3	noc21-ee98	Integrated Photonics Devices and Circuits	IITM	3	12 weeks	October 15, 2021	October 24, 2021	https://onlinecourses.nptel.ac.in/noc21_ee97/preview
4	ECEA 5362	FPGA Softcore Processors and IP Acquisition	University of Colorado Boulder	1	4 weeks	Considered from registered Date		https://www.coursera.org/learn/fpga-softcore-proccessors-ip
5	ECEA 5360	Introduction to	University	1	4 weeks	Considered from		https://www.coursera.org/learn/fpga-hardware-description-

		FPGA Design for Embedded Systems	of Colorado Boulder			registered Date		languages?specialization=fpga-design
6	ECEA 5361	Hardware Description Languages for FPGA Design	University of Colorado Boulder	1	4 weeks	Considered from registered Date		https://www.coursera.org/learn/fpga-hardware-description-languages?specialization=fpga-design
7	ECEA 5363	FPGA Capstone: Building FPGA Projects	University of Colorado Boulder	1	4 weeks	Considered from registered Date		https://www.coursera.org/learn/capstone-fpga-design