



Delhi Skill and Entrepreneurship University

**M.Tech.
(Electronics and
Communication
Engineering with
Specialization in IOT)**

SYLLABUS DOCUMENT



Effective from Academic Year 2022-23

Program Information

Introduction

Delhi Skill and Entrepreneurship University offers a two-year Master of Technology, Postgraduate Degree Program under Electronics & Communication Engineering with specialization in the Internet of Things. While studying the course, students will understand the technical and functional environment of Electronics & Communication Engineering, build a skill set on the emerging technologies such as the Internet of Things and learn industry's best practices, thereby helping them in the development of several skills. Students will be exposed to practical knowledge along with theoretical sessions in the classroom. The program intends to make a significant contribution toward the development of skilled technical manpower and aid the progress of the nation.

Program Educational Objectives (PEO's):

1. To provide students with opportunities to acquire the ability to apply the fundamentals of mathematics and ECE in IoT for quantitative analysis of problems.
2. To provide students with opportunities to develop innovative design skills, including the ability to formulate problems, think creatively, synthesize information and communicate effectively.
3. To create an ability to give solutions for real-time issues using research and complex solving problems.
4. To provide students with opportunities to develop the ability to use modern experimental techniques; collect, analyse, and interpret experimental data; and to communicate the results effectively.
5. To provide opportunities to prepare students with the diverse skills needed to be successful engineers
6. To create an ability to write and present a substantial technical report/document along with seminar

Pedagogy and Teaching Methodology

The program's effective pedagogy which is developed with the support of experts from the industry and Subject Matter experts from renowned academic institutions will aid in developing the skills in young professionals. Focus on real-world examples, activity-based learning, in-campus laboratory training and research-oriented projects will lead to the holistic development of students. Classroom training interspersed with industry visits, guest lectures and project assignments will provide students with a much-needed practical exposure to fit in today's industry.

Credit scheme

Semester I			
SI No.	Course Code	Course Name	Total Credits
1.	MT-EC-ES-101	Principles of Sensors and Signal Conditioning	4
2.	MT-EC-ES-103	IoT Fundamentals and Architecture	4
3.	MT-EC-ES-105	Embedded System Design and Architecture	4
4.	MT-EC-ES-107	Advanced Statistical Methods	3
5.	MT-EC-PE-1XX	Programme Elective-I #	3
6.	MT-EC-AC-119	Personality Development through Life Enlightenment Skills (Audit Course-I)	2
7.	MT-EC-WC-121	One- Week Hands-on Workshop (in-house)	0
8.	MT-EC-PC109	Advanced Control System	3
Programme Elective-I(Choose any one from the following subjects)			
9.	MT-EC-PE-111	Analog and Interfacing Circuits	3
10.	MT-EC-PE-113	Advanced Digital Image Processing	3
11.	MT-EC-PE-115	Advanced Digital system Design	3
12.	MT-EC-PE-117	Advanced Communication systems	3
Total			18

Note

- 1) One-week Hands-on Workshop (In-house) will be accessed and mandatory to pass.
- 2) #This course may be studied from MOOCs.

Semester II			
SI No.	Course Code	Course Name	Total Credits
1.	MT-EC-ES-102	Machine Learning for IoT	4
2.	MT-EC-ES-104	IoT Security and Trust	3
3.	MT-EC-ES-106	Research Methodology	3
4.	MT-EC-PE-1XX	Programme Elective-II	3
5.	MT-EC-PE-1XX	Programme Elective-III	3
6.	MT-EC-AC-128	English for Research Paper Writing (Audit Course-II)	0
7.	MT-EC-WC-130	One-week Hands-on Workshop (In-house)	0
8.	MT-EC-ES-132	Mini Project with Seminar	1
TOTAL			17

Note:

- Students will undergo Industrial Training/Internship for at least 4 to 6 weeks during semester break. However, Viva-Voce will be conducted in the 3rd semester.
- For Audit Course-II, even though the credits are Zero, it is mandatory for the students to secure 50% in that particular subject.
- At least one elective course i.e programme elective-I & II may be studied from MOOCS.

Semester III			
SI No.	Course Code	Course Name	Total Credits
1.	MT-EC-PE-2XX	Programme Elective-IV	3
2.	MT-EC-OE-2XX	Open Elective	3
3.	MT-EC-ES-227	Viva-Voce of Internship /Industrial training summer vacations	1
4.	MT-EC-ES-229	Dissertation Phase-I/Industrial Project	10
Total			17

Note: Dissertation-I/ Industrial Project

For doing the Dissertation Phase-I/Industrial Project, the students will select a topic relevant to Electronics & Communication Engineering with a specialisation to IOT extended to perform their dissertation/Industrial project. The dissertation can be design, analytical work, simulation, manufacturing, or a combination of these in the emerging areas of Electronics & Communication Engineering with a specialisation in IOT under the supervision of engineering faculty from the

Department or an industry mentor. The students will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format. The students will have to present the progress of the work through seminars/progress reports. The end semester evaluation shall be on the basis of viva-voce and project report. Students opting for Dissertation Phase-I may complete the course offered in Semester III through MOOC. However, students going for Industrial Project/ Thesis will complete the courses offered in Semester III through MOOC only.

Semester IV			
SI No	Course Code	Course Name	Total Credits
1.	MT-EC-ES-202	Dissertation Phase-II	16
TOTAL			16

Note: Dissertation-II

Students should complete the work planned in the third semester, attaining all the objectives, and should prepare the project report of the complete work done in the two semesters. They are expected to communicate their innovative ideas and results in reputed conferences and/or journals. The student has to present seminars for the evaluation of the dissertation work during the fourth semester. The report of the work completed shall be evaluated in the presence of a committee.

List of Programme Electives			
SI No.	Course Code	Course Name	Total Credits
Programme Elective-I (Choose any one from the following subjects)			
1.	MT-EC-PE-109	Advanced Control System	3
2.	MT-EC-PE-111	Analog & Interfacing Circuits	3
3.	MT-EC-PE-113	Advanced Digital Image Processing	3
4.	MT-EC-PE-115	Advanced Digital System Design	3
5.	MT-EC-PE-117	Advanced Communication Systems	3
Programme Elective-II (Choose any one from the following subjects)			
6.	MT-EC-PE-108	Wireless Sensor Protocols and Programming	3
7.	MT-EC-PE-110	Systems-on-chip Design	3
8.	MT-EC-PE-112	Smart Convergent Technologies	3
9.	MT-EC-PE-114	Smart Antenna	3
10.	MT-EC-PE-116	Filtering Algorithm	3
Programme Elective-III (Choose anyone from the following subjects)			
11.	MT-EC-PE-118	Low Power VLSI Design	3

12.	MT-EC-PE-120	Graph Theory and Optimization Techniques	3
13.	MT-EC-PE-122	RF and Microwave Sensors	3
14.	MT-EC-PE-124	Biomedical Sensors	3
15.	MT-EC-PE-126	Flexible and Wearable Sensors	3

Programme Elective-IV (Choose anyone from the following subjects)			
16.	MT-EC-PE-201	Energy Harvesting for IoT	3
17.	MT-EC-PE-203	Embedded OS and RTOS	3
18.	MT-EC-PE-205	ASIC Design	3
19.	MT-EC-PE-207	Computational EM	3
20.	MT-EC-PE-209	Graph Theory and Optimization Techniques	3
Open Elective (Choose any one from the following subjects)			
21.	MT-EC-OE-211	Renewable Energy Resources	3
22.	MT-EC-OE-213	Industrial Safety	3
23.	MT-EC-OE-215	Industrial Pollution	3
24.	MT-EC-OE-217	Cost Management of Engineering Projects	3
25.	MT-EC-OE-219	Managerial Economics	3
26.	MT-EC-OE-221	Business Analytics	3
27.	MT-EC-OE-223	Disaster Management	3
28.	MT-EC-OE-225	Electric Vehicles	3