Course Structure

For

Executive M.Tech. Degree

in

Advanced Communication Systems and Signal Processing

Dept. of Electronics & Communication Engineering

Indian Institute of Information Technology Kalyani

Webel IT Park Campus

West Bengal 741235, India

Program Highlights

This specialization allows students (including industry professionals) to acquire in-depth theoretical and practical knowledge of modern communication systems and signal processing techniques. Students are introduced to the current state-of-the-art technologies in this field and makes them undertake practical research problems. The course is specifically designed to equip students with the necessary skill required in both academia and industry.

Program Objectives
- Research oriented course structure focusing industry needs
- State-of-the-art communication technologies with solid mathematical foundation
- Online mode of teaching with introduction of case studies, simulations and virtual labs
- Learners to be introduced to real-world problems
- Special emphasis on scholarly publications (Journal/conference publication)
- Flexibility like course-break (up-to one year)
- Continuous evaluation system and research output-based evaluation

Program Outcomes
At the end of the curriculum, the students will be able to:
- Understand the fundamental principles of communication theory
- Develop the ability to apply signal processing techniques as powerful tools in communication engineering
- Develop necessary skill-set to design and analyze communication networks
- Apply concepts of modern communication technologies to contribute to current/ future wireless standards
- Develop intuition to handle practical research problems and an impetus for higher studies in the field of communications and allied areas

Program Structure
- A self-paced programme of 62 credits (choice based)
- The credits can be earned over 3 to 4 years.
- Theory coursework: 24 credits.
- Laboratory: 08 credits
- Dissertation: 27 credits
- Comprehensive Viva: 03 credits
- Projects in last two semesters (after the course works are complete). The students will have the option of taking lesser number of courses in a semester and complete the coursework requirement in 3 to 4 years.
- The projects can be taken only after all the credits of the core courses are earned.

Intake
Thirty (30) per year

Eligibility
Qualifying degree: B.Tech./B.E. degree in ECE/CS/IT/EE or related disciplines, MCA, or an MSc/MS in ECE/CS/IT/EE or related disciplines.

The candidate should have scored at least 60% aggregate marks in previous degree examination(s). The candidates from industry, after acquiring the qualifying degree may join the course, subject to the approval of the parent organization.

Age Limit: There is no upper age limit for admission in this programme.

Admission Procedure
Admission will be done as per merit in the entrance test conducted by IIIT Kalyani.

Course Modality
The course will be conducted via live online classes and virtual labs conducted over the weekends. The schedule will be communicated in advance and be flexible enough so that working professionals can manage smoothly.

Degree to be conferred
- After successful completion of the full credit requirement, student will get Executive M.Tech degree in Advanced Communication Systems and Signal Processing.
- Individual certificates will be issued against each completed course also.

Credit Structure

Description	Credits
Core courses	15
Elective Courses	09
Laboratory	08
Major Project Dissertation	27
Comprehensive Viva Voce	03
Total credits	**62**

Fee Structure and Registration System

For successful completion of the program, a student has to earn 62 credits in total. The credit structure is shown in the table above. The fee structure will have two components:

(a) Registration fee of INR 10,000 per semester to keep the enrolment active.

(b) The course fee: Rs. 5000 per theory credit registration and Rs. 3000 per sessional / project credit registration. For example, in a semester, if a student registers for C1 theory credits and C2 sessional / project credits then the candidate has to pay INR ($5000 \times C1 + 3000 \times C2 + 10000$) in that semester**.**

N.B: All the credits must be earned within eight semesters (four years) to get the degree.

Course Structure
L: Lecture, T: Tutorial, P: Practical

Semester: I						
Theoretical Papers						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Mathematics for Communication Theory (or Signal Theory)	3	0	0	3
2		Advanced Digital Communications	3	0	0	3
Sessional Papers						
1		Communication System Design Laboratory	0	0	3	2
Total						**8**

Semester: II						
Theoretical Papers						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Wireless Communication and Networking	3	0	0	3
2		Elective – I	3	0	0	3
Sessional Papers						
1		Wireless Communication and Networking Laboratory	0	0	3	2
Total						**8**

Semester: III						
Theoretical Papers						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Advanced Signal Processing	3	0	0	3
2		Elective – II	3	0	0	3
Sessional Papers						
1		Signal Processing Laboratory	0	0	3	2
Total						**8**

Semester: IV						
Theoretical Papers						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Advanced Wireless Technologies	3	0	0	3
2		Elective – III	3	0	0	3
Sessional Papers						
1		Mini Project on Advanced Wireless Technologies	0	0	3	2
Total						**8**

Semester: V						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Major Project Dissertation	0	0	0	15
Total						**15**

Semester: VI						
Sl. No.	Code	Subject	Classes/ Week			Credit
			L	T	P	
1		Major Project Dissertation	0	0	0	12
2		Comprehensive Viva Voce	0	0	0	03
Total						**15**

List of Electives

All electives will have L-T-P loading 3-0-0 and 3 credits.

1. Broadband Communication Systems	12. Mobile Computing
2. Machine Intelligence and Learning	13. Array Signal Processing
3. Microwave Theory and Techniques	14. Optical Communication Systems
4. MIMO Wireless Communications	15. Antenna Theory and Techniques
5. Computer Communication Networks	16. Compressive Sensing
6. Mobile Satellite Communications	17. Optimization Theory
7. Telecommunication Switching and Transmission	18. Speech Processing
8. Quantum Communications	19. Cyber Physical System
9. Information Theory and Coding	20. Secured Communication
10. Internet of Things	
11. Detection and Estimation Theory	