



# ADHIYAMAAN COLLEGE OF ENGINEERING

[An Autonomous Institution Affiliated to Anna University, Chennai]

[Accredited by NAAC]

Dr. M.G.R NAGAR, HOSUR, KRISHNAGIRI (DT) – 635 130, TAMILNADU, INDIA

REGULATIONS 2022

CHOICE BASED CREDIT SYSTEM

**M.E- COMMUNICATION SYSTEMS**

## VISION

To develop well-disciplined and competent engineers who will excel in the field of Electronics and Communication Engineering.

## MISSION

- To develop qualified technical personnel with a strong knowledge on basic engineering principles.
- To disseminate Innovative technical skills by fostering excellence in engineering education.
- To promote exemplary professional conduct, to be utilised for the betterment of the society.

The Programme defines Programme Educational Objectives, Programme Outcomes and Programme Specific Outcomes as follows:

### I. PROGRAMME EDUCATIONAL OBJECTIVES [PEOs]

**PEO 1** Implementing and applying analytical method to solve problems related to research by using advanced technologies in the field of engineering.

**PEO 2** To instil professional and ethical attitude in students. To pursue lifelong learning as a means of enhancing knowledge and skills necessary to contribute and accelerate the pace of profession

**PEO 3** To inculcate intellectual team work skills for evaluating engineering related concerns from comprehensive social perspective for truly contributing to the needs of the society.

### II. PROGRAM OUTCOMES [POs]

PO 1 An ability to independently carry out research/investigation and development work to solve practical problems

PO 2 An ability to write and present a substantial technical report/document.

PO 3 Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

**Curricula and Syllabi  
of  
M.E- Communication Systems  
Regulations 2022**

**Choice Based Credit System**

**Department of Electronics & Communication  
Engineering**



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**Dr. M.G.R NAGAR**

**HOSUR, KRISHNAGIRI (DT) - 635 130**

**TAMILNADU, INDIA**

**ADHIYAMAAN COLLEGE OF ENGINEERING (AUTONOMOUS), HOSUR**

(AUTONOMOUS)

AFFILIATED TO ANNA UNIVERSITY

M.E. COMMUNICATION SYSTEMS

REGULATIONS – 2022

CHOICE BASED CREDIT SYSTEM

I TO IV SEMESTERS CURRICULA AND SYLLABI

**SEMESTER I**

| S.NO             | COURSE CODE | COURSE TITLE                                   | CATEGORY | PERIODS PER WEEK |          |          | TOTAL CONTACT PERIODS | CREDITS   |
|------------------|-------------|--|----------|------------------|----------|----------|-----------------------|-----------|
|                  |             |  |          | L                | T        | P        |                       |           |
| <b>THEORY</b>    |             |  |          |                  |          |          |                       |           |
| 1                | 122COT01    | Linear Algebra, Probability and Queuing Theory | FC       | 3                | 1        | 0        | 4                     | 4         |
| 2                | 122COT02    | Advanced Digital Signal Processing             | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 3                | 122COT03    | Modern Digital Communication Techniques        | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 4                | 122COT04    | Advanced Wireless Communication                | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 5                | 122COT05    | Advanced Radiation Systems                     | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 6                | 122COT06    | Research Methodology & IPR                     | RMC      | 3                | 0        | 0        | 3                     | 3         |
| 7                | 122COAXX    | Audit Course-1*                                | AC       | 2                | 0        | 0        | 2                     | 0         |
| <b>PRACTICAL</b> |             |  |          |                  |          |          |                       |           |
| 8                | 122COP07    | Advanced Communication Systems Laboratory-I    | PCC      | 0                | 0        | 2        | 2                     | 1         |
| 9                | 122COP08    | Advanced Digital Signal Processing Laboratory  | PCC      | 0                | 0        | 2        | 2                     | 1         |
| <b>Total</b>     |             |  |          | <b>20</b>        | <b>1</b> | <b>4</b> | <b>25</b>             | <b>21</b> |

**SEMESTER II**

| S.NO             | COxURSE CODE | COURSE TITLE                                   | CATEGORY | PERIODS PER WEEK |          |          | TOTAL CONTACT PERIODS | CREDITS   |
|------------------|--------------|--|----------|------------------|----------|----------|-----------------------|-----------|
|                  |              |  |          | L                | T        | P        |                       |           |
| <b>THEORY</b>    |              |  |          |                  |          |          |                       |           |
| 1                | 222COT01     | RF system design                               | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 2                | 222COT02     | Photonic and Microwave Integrated Circuits     | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 3                | 222COT03     | Advanced Wireless Networks                     | PCC      | 3                | 0        | 0        | 3                     | 3         |
| 4                | 222COEXX     | Professional Elective I                        | PEC      | 3                | 0        | 0        | 3                     | 3         |
| 5                | 222COEXX     | Professional Elective II                       | PEC      | 3                | 0        | 0        | 3                     | 3         |
| 6                | 222COOXX     | Open Elective                                  | OEC      | 3                | 0        | 0        | 3                     | 3         |
| 7                | 222COAXX     | Audit Course-II                                | AU       | 2                | 0        | 0        | 2                     | 0         |
| <b>PRACTICAL</b> |              |  |          |                  |          |          |                       |           |
| 8                | 222COP07     | Advanced Communication Systems Laboratory - II | PCC      | 0                | 0        | 2        | 2                     | 1         |
| 9                | 222COP08     | Term Paper and Seminar                         | EEC      | 0                | 0        | 2        | 2                     | 1         |
| <b>Total</b>     |              |  |          | <b>20</b>        | <b>0</b> | <b>4</b> | <b>24</b>             | <b>20</b> |

\*Audit course is optional

**SEMESTER III**

| S.NO             | COURSE CODE | COURSE TITLE                              | CATEGORY | PERIODS PER WEEK |   |    | TOTAL CONTACT PERIODS | CREDITS |
|------------------|-------------|---|----------|------------------|---|----|-----------------------|---------|
|                  |             |   |          | L                | T | P  |                       |         |
| <b>THEORY</b>    |             |   |          |                  |   |    |                       |         |
| 1                | 322COT01    | Optical and Mobile Communication Networks | PCC      | 3                | 0 | 0  | 3                     | 3       |
| 2                | 322COT02    | Machine Learning                          | PCC      | 3                | 0 | 0  | 3                     | 3       |
| 3                | 322COEXX    | Professional Elective III                 | PEC      | 3                | 0 | 0  | 3                     | 3       |
| 4                | 322COEXX    | Professional Elective IV                  | PEC      | 3                | 0 | 0  | 3                     | 3       |
| <b>PRACTICAL</b> |             |   |          |                  |   |    |                       |         |
| 1                | 322COP05    | Project Work Phase – I                    | EEC      | 0                | 0 | 12 | 12                    | 6       |
| <b>Total</b>     |             |   |          | 12               | 0 | 12 | 24                    | 18      |

**SEMESTER IV**

| S.NO             | COURSE CODE | COURSE NAME             | CATEGORY | L | T | P  | TOTAL CONTACT PERIODS | C  |
|------------------|-------------|-------------------------|----------|---|---|----|-----------------------|----|
| <b>PRACTICAL</b> |             |                         |          |   |   |    |                       |    |
| 1                | 422COP01    | Project Work Phase – II | EEC      | 0 | 0 | 24 | 24                    | 12 |
| <b>Total</b>     |             |                         |          | 0 | 0 | 24 | 24                    | 12 |

**Professional Electives  
Semester II, Elective I**

| S.NO | COURSE CODE | COURSE TITLE  | CATEGORY | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|---|----------|------------------|---|---|-----------------------|---------|
|      |             |   |          | L                | T | P |                       |         |
| 1    | 222COE01    | Electromagnetic Interference and Compatibility          | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 2    | 222COE02    | WDM Optical Networks                                    | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 3    | 222COE03    | High Speed Switching Architecture                       | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 4    | 222COE04    | Wavelets and Multi-Resolution Processing                | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 5    | 222COE05    | Signal Integrity in High-Speed Design                   | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 6    | 222COE06    | Advanced Satellite Communication and Navigation systems | PEC      | 3                | 0 | 0 | 3                     | 3       |

**Semester II, Elective II**

| S.NO | COURSE CODE | COURSE TITLE                       | CATEGORY | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|------------------------------------|----------|------------------|---|---|-----------------------|---------|
|      |             |                                    |          | L                | T | P |                       |         |
| 1    | 222COE07    | Multimedia Compression Techniques  | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 2    | 222COE08    | Cognitive Radio                    | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 3    | 222COE09    | Speech and Audio Signal Processing | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 4    | 222COE10    | mm Wave Communication              | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 5    | 222COE11    | Mixed - Signal Circuit Design      | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 6    | 222COE12    | Sensor Networks and IoT            | PEC      | 3                | 0 | 0 | 3                     | 3       |

**Semester III, Elective III**

| S.NO | COURSE CODE | COURSE TITLE                                     | CATEGORY | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|--|----------|------------------|---|---|-----------------------|---------|
|      |             |  |          | L                | T | P |                       |         |
| 1    | 322COE01    | Smart Antennas                                   | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 2    | 322COE02    | VLSI for Wireless Communication                  | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 3    | 322COE03    | RF MEMS  | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 4    | 322COE04    | Analysis and Design of Planar Transmission Lines | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 5    | 322COE05    | Ultra-Wide band Communications                   | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 6    | 322COE06    | Software Defined Radio                           | PEC      | 3                | 0 | 0 | 3                     | 3       |

**Semester III, Elective IV**

| S.NO | COURSE CODE | COURSE TITLE                       | CATEGORY | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|------------------------------------|----------|------------------|---|---|-----------------------|---------|
|      |             |                                    |          | L                | T | P |                       |         |
| 1    | 322COE07    | Advanced Digital Image Processing  | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 2    | 322COE08    | Embedded Systems for Communication | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 3    | 322COE09    | Detection and Estimation theory    | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 4    | 322COE10    | Optical Signal Processing          | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 5    | 322COE11    | Ad Hoc Network                     | PEC      | 3                | 0 | 0 | 3                     | 3       |
| 6    | 322COE12    | Remote Sensing                     | PEC      | 3                | 0 | 0 | 3                     | 3       |

**Audit Courses (AC)**

| S.NO | COURSE CODE | COURSE TITLE                       | CATEGORY | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|------------------------------------|----------|------------------|---|---|-----------------------|---------|
|      |             |                                    |          | L                | T | P |                       |         |
| 1    | X22COA01    | English for Research Paper Writing | AC       | 2                | 0 | 0 | 2                     | 0       |
| 2    | X22COA02    | Disaster Management                | AC       | 2                | 0 | 0 | 2                     | 0       |

|   |          |                       |    |   |   |   |   |   |
|---|----------|-----------------------|----|---|---|---|---|---|
| 3 | X22COA03 | Constitution of India | AC | 2 | 0 | 0 | 2 | 0 |
| 4 | X22COA04 | நற்றமிழ் இலக்கியம்    | AC | 2 | 0 | 0 | 2 | 0 |

### Open Electives (OE) from other departments

| S.No | Course Code | Course Title                                   | Category | PERIODS PER WEEK |   |   | TOTAL CONTACT PERIODS | CREDITS |
|------|-------------|--|----------|------------------|---|---|-----------------------|---------|
|      |             |  |          | L                | T | P |                       |         |
| 1    | 222COO01    | Energy Auditing and management                 | OEC      | 3                | 0 | 0 | 3                     | 3       |
| 2    | 222COO02    | HVDC and FACTS Controllers                     | OEC      | 3                | 0 | 0 | 3                     | 3       |
| 3    | 222COO03    | Power Electronics for Renewable Energy Systems | OEC      | 3                | 0 | 0 | 3                     | 3       |
| 4    | 222COO04    | Design of Hybrid and Electric vehicles         | OEC      | 3                | 0 | 0 | 3                     | 3       |
| 5    | 222COO05    | Industry 4.0                                   | OEC      | 3                | 0 | 0 | 3                     | 3       |
| 6    | 222COO06    | Industrial Internet of Things                  | OEC      | 3                | 0 | 0 | 3                     | 3       |

### Allocation of Credits:

| Semester | I  | II | III | IV |
|----------|----|----|-----|----|
| Credits  | 21 | 20 | 18  | 12 |
| Total    | 71 |    |     |    |

### SUMMARY

| S.No | SUBJECT AREA                | CREDITS PER SEMESTER |    |     |    | CREDITS TOTAL | WEIGHTAGE |
|------|-----------------------------|----------------------|----|-----|----|---------------|-----------|
|      |                             | I                    | II | III | IV |               |           |
| 1.   | FC                          | 4                    |    |     |    | 4             | 5.63%     |
| 2.   | PCC                         | 14                   | 10 | 6   |    | 30            | 42.25%    |
| 3.   | PEC                         |                      | 6  | 6   |    | 12            | 16.9%     |
| 4.   | OEC                         |                      | 3  |     |    | 3             | 4.22%     |
| 5.   | EEC                         |                      | 1  | 6   | 12 | 19            | 26.76%    |
| 6.   | RMC                         | 3                    |    |     |    | 3             | 4.22%     |
| 7.   | Non Credit/<br>Audit Course | ✓                    |    |     |    |               |           |
|      | TOTAL CREDIT                | 21                   | 20 | 18  | 12 | 71            | 100%      |

**Foundation Courses (FC)**

| S. NO | COURSE CODE | COURSE TITLE                                   | PERIODS PER WEEK |          |           | CREDITS | SEMESTER |
|-------|-------------|--|------------------|----------|-----------|---------|----------|
|       |             |  | Lecture          | Tutorial | Practical |         |          |
| 1.    | 122COT01    | Linear Algebra, Probability and Queuing Theory | 3                | 1        | 0         | 4       | I        |

**PROFESSIONAL CORE COURSES (PCC)**

| S.No. | COURSE CODE | COURSE TITLE                                  | PERIODS PER WEEK |   |   | CREDITS | SEMESTER |
|-------|-------------|---|------------------|---|---|---------|----------|
|       |             |   | L                | T | P |         |          |
| 1     | 122COT02    | Advanced Digital Signal Processing            | 3                | 1 | 0 | 4       | I        |
| 2     | 122COT03    | Modern Digital Communication Techniques       | 3                | 0 | 0 | 3       | I        |
| 3     | 122COT05    | Advanced Radiation Systems                    | 3                | 0 | 0 | 3       | I        |
| 4     | 122COT06    | Advanced Wireless Communication               | 3                | 0 | 0 | 3       | I        |
| 5     | 122COP01    | Communication Systems Laboratory-I            | 0                | 0 | 2 | 1       | I        |
| 6     | 122COP02    | Advanced Digital Signal Processing Laboratory | 0                | 0 | 2 | 1       | I        |
| 7     | 222COT01    | RF System Design                              | 3                | 0 | 0 | 3       | II       |
| 8     | 222COT02    | Photonic and Microwave Integrated Circuits    | 3                | 0 | 0 | 3       | II       |
| 9     | 222COT03    | Advanced Wireless Networks                    | 3                | 0 | 0 | 3       | II       |
| 10    | 222COP01    | Communication Systems Laboratory - II         | 0                | 0 | 2 | 1       | II       |
| 11    | 322COT01    | Optical and Mobile Communication Networks     | 3                | 0 | 0 | 3       | III      |
| 12    | 322COT02    | Machine Learning                              | 3                | 0 | 0 | 3       | III      |

**RESEARCH METHODOLOGY AND IPR COURSES (RMC)**

| S.NO | COURSE CODE | COURSE TITLE               | PERIODS PER WEEK |          |           | CREDITS | SEMESTER |
|------|-------------|----------------------------|------------------|----------|-----------|---------|----------|
|      |             |                            | Lecture          | Tutorial | Practical |         |          |
| 1    | 122COT04    | Research Methodology & IPR | 3                | 0        | 0         | 3       | I        |

**EMPLOYABILITY ENHANCEMENT COURSES (EEC)**

| NO | COURSE CODE | COURSE TITLE              | PERIODS PER WEEK |          |           | CREDITS | SEMESTER |
|----|-------------|---------------------------|------------------|----------|-----------|---------|----------|
|    |             |                           | Lecture          | Tutorial | Practical |         |          |
| 1  | 222COP02    | Term Paper and Seminar    | 0                | 0        | 2         | 1       | II       |
| 2  | 322COP01    | Project Work (Phase – I)  | 0                | 0        | 12        | 6       | III      |
| 3  | 422COP01    | Project Work (Phase – II) | 0                | 0        | 24        | 12      | IV       |