

## **Electrical Engineering Department**

**The academic program consists of:**

- Humanities, General, and Engineering courses totaling **48 credit units**.
- **106 credit units** of compulsory specialized courses.
- **6 credit units** of elective courses.

Thus, the total number of credit units required for a student to obtain a **Bachelor's Degree in Electrical Engineering** is **160 units**.

Before specializing in Electrical Engineering, the student must complete **36 credit units** in the **General Orientation Department**.

Within the Electrical Engineering Department itself, the student completes **124 credit units**.

- Total theoretical hours in the department: **100 hours**.
- Total practical hours in the department: **78 hours**.
- **Field training** is conducted during the final semester at a rate of **4 hours per week**.

## First Year: General Engineering

### First Semester (Fall)

| No          | Code   | Course of study            | hours       |           | Units | No. of study hours per week |
|-------------|--------|----------------------------|-------------|-----------|-------|-----------------------------|
|             |        |                            | theoretical | practical |       |                             |
| 1           | GS 101 | Mathematics I              | 4           | -         | 4     | 4                           |
| 2           | GS 103 | Physics I                  | 3           | -         | 3     | 3                           |
| 3           | GE104  | Computer                   | 3           | -         | 3     | 3                           |
| 4           | HS 106 | Arabic language            | 2           | -         | 2     | 2                           |
| 5           | GS 204 | Statistics and probability | 3           | -         | 3     | 3                           |
| 6           | GE 103 | Mechanics Engineering I    | 3           | -         | 3     | 3                           |
| Total Units |        |                            |             |           | 18    |                             |

### Second Semester (Spring)

| No          | Code   | Course of study     | hours       |           | Units | No. of study hours per week |
|-------------|--------|---------------------|-------------|-----------|-------|-----------------------------|
|             |        |                     | theoretical | practical |       |                             |
| 1           | GS 102 | Mathematics II      | 3           | -         | 3     | 3                           |
| 2           | GS 104 | Physics II          | 3           | 3         | 4     | 6                           |
| 3           | GS 105 | Chemistry           | 4           | -         | 4     | 6                           |
| 4           | HS 103 | English language    | 2           | -         | 2     | 2                           |
| 5           | GE 102 | Engineering drawing | 1           | 4         | 3     | 5                           |
| 6           | HS 110 | National culture    | 2           | -         | 2     | 2                           |
| Total Units |        |                     |             |           | 18    |                             |

## Curriculum of the Department of Electrical Engineering

| Third Semester  |    |    |     |                                      |            |    |
|-----------------|----|----|-----|--------------------------------------|------------|----|
| Pre-request     | P. | L. | Cr. | Course Name                          | Course No. | s. |
| GS105           | -- | 3  | 3   | <b>Engineering Mathematics III</b>   | GS201      | 1  |
| , GS108 GS110   | -- | 2  | 2   | <b>Electromagnetics I</b>            | EE201      | 2  |
| , GS108 GS110   | 3  | 3  | 4   | <b>Electrical Circuits I</b>         | EE203      | 3  |
| GE114           | 3  | 2  | 3   | <b>Advanced Programming (MATLAB)</b> | EE205      | 4  |
|                 | -- | 2  | 2   | <b>Workshop Technology</b>           | GE107      | 5  |
| GS113           | -- | 2  | 2   | <b>Electrical Materials Science</b>  | EE207      | 6  |
|                 | 6  | 14 | 16  | sum                                  |            |    |
| Fourth Semester |    |    |     |                                      |            |    |
| Pre-request     | P. | L. | Cr. | Course Name                          | Course No. | s. |
| GS108           | -- | 3  | 3   | <b>Engineering Mathematics IV</b>    | GS202      | 1  |
| EE203           | 3  | 3  | 4   | <b>Electrical Circuits II</b>        | EE204      | 2  |
| GS201 , GE114   | -- | 3  | 3   | <b>Numerical Analysis</b>            | GS2---     | 3  |
|                 | -- | 1  | 1   | <b>Technical Report Writing</b>      | GS2---     | 4  |
| EE201           | -- | 2  | 2   | <b>Electromagnetics II</b>           | EE202      | 5  |
| EE203           | 3  | 2  | 3   | <b>Electrical Measurements</b>       | EE206      | 6  |
|                 | 6  | 14 | 16  | sum                                  |            |    |

| Fifth Semester |    |    |     |                                             |            |    |
|----------------|----|----|-----|---------------------------------------------|------------|----|
| Pre-request    | P. | L. | Cr. | Course Name                                 | Course No. | s. |
| EE204 ,GS201   | -- | 3  | 3   | <b>Signals and Systems</b>                  | EE301      | 1  |
| EE203          | 3  | 3  | 4   | <b>Logic Circuit Design</b>                 | EE305      | 2  |
| EE203          | 3  | 3  | 4   | <b>Electronics I</b>                        | EE303      | 3  |
| EE202, EE204   | -- | 3  | 3   | <b>Power Systems I</b>                      | EE307      | 4  |
|                | 6  | 12 | 14  | sum                                         |            |    |
| Sixth Semester |    |    |     |                                             |            |    |
| Pre-request    | P. | L. | Cr. | Course Name                                 | Course No. | s. |
| EE301          | 3  | 3  | 4   | <b>Automatic Control Systems I</b>          | EE302      | 1  |
| EE303          | 3  | 3  | 4   | <b>Electronics II</b>                       | EE304      | 2  |
| GS206 , EE301  | 3  | 2  | 3   | <b>Principles of Communications</b>         | EE306      | 3  |
| EE301          | -- | 3  | 3   | <b>DSP (Digital Signal Processing)</b>      | EE302      | 4  |
|                | -- | 2  | 2   | <b>Engineering Management and Economics</b> | GS3---     | 5  |
|                | 9  | 13 | 16  | sum                                         |            |    |

| Seventh Semester (Communications Specialization) |    |    |     |                                     |            |    |
|--------------------------------------------------|----|----|-----|-------------------------------------|------------|----|
| Pre-request                                      | P. | L. | Cr. | Course Name                         | Course No. | s. |
| EE302                                            | 3  | 3  | 4   | <b>Automatic Control Systems II</b> | EE403      | 1  |
| EE306                                            | 3  | 3  | 4   | <b>Digital Communications I</b>     | EE405      | 2  |
| EE305, EE303                                     | -- | 3  | 3   | <b>Digital Electronic Circuits</b>  | EE407      | 3  |
| EE204 ,EE201                                     | 3  | 3  | 4   | <b>Electrical Machines I</b>        | EE409      | 4  |

|                                                        |           |           |            |                                     |                   |           |
|--------------------------------------------------------|-----------|-----------|------------|-------------------------------------|-------------------|-----------|
|                                                        | 9         | 12        | 15         | sum                                 |                   |           |
| <b>Eighth Semester (Communications Specialization)</b> |           |           |            |                                     |                   |           |
| <b>Pre-request</b>                                     | <b>P.</b> | <b>L.</b> | <b>Cr.</b> | <b>Course Name</b>                  | <b>Course No.</b> | <b>s.</b> |
| EE405                                                  | 3         | 3         | 4          | <b>Digital Communications II</b>    | EE406             | 1         |
| EE304                                                  | 3         | 3         | 4          | <b>Advanced Electronic Circuits</b> | EE402             | 2         |
|                                                        | --        | 3         | 3          | <b>Artificial Intelligence</b>      | EE518             | 3         |
| EE403                                                  | --        | 3         | 3          | <b>Digital Control Systems</b>      | EE404             | 4         |
| EE305                                                  | 3         | 2         | 3          | <b>Microprocessor</b>               | EE410             | 5         |
|                                                        | 9         | 14        | 17         | sum                                 |                   |           |

|                                                       |           |           |            |                                          |                   |           |
|-------------------------------------------------------|-----------|-----------|------------|------------------------------------------|-------------------|-----------|
| <b>Ninth Semester (Communications Specialization)</b> |           |           |            |                                          |                   |           |
| <b>Pre-request</b>                                    | <b>P.</b> | <b>L.</b> | <b>Cr.</b> | <b>Course Name</b>                       | <b>Course No.</b> | <b>s.</b> |
| EE405                                                 | --        | 3         | 3          | <b>Mobile Telecommunication Networks</b> | EE501             | 1         |
| EE405                                                 | 3         | 3         | 4          | Transmission Media and Optical Fibers    | EE403             | 2         |
| EE202                                                 | 3         | 3         | 4          | Antennas                                 | EE505             | 3         |
|                                                       | 3         | 2         | 3          | Elective Course                          | EE5--             | 4         |
|                                                       | 3         | --        | 1          | <b>Graduation Project Introduction</b>   | EE5509            | 5         |
|                                                       | 12        | 11        | 15         | sum                                      |                   |           |
| <b>Tenth Semester (Communications Specialization)</b> |           |           |            |                                          |                   |           |
| <b>Pre-request</b>                                    | <b>P.</b> | <b>L.</b> | <b>Cr.</b> | <b>Course Name</b>                       | <b>Course No.</b> | <b>s.</b> |
| EE202, EE306                                          | 3         | 3         | 4          | <b>Microwaves</b>                        | EE502             | 1         |
| EE305                                                 | 3         | 2         | 3          | PLC (Programmable Logic Controller)      | EE504             | 2         |
|                                                       | 3         | 2         | 3          | Elective Course                          | EE5--             | 3         |
| EE303                                                 | 3         | 2         | 3          | Computer Applications (Arduino Uno)      | EE506             | 4         |
|                                                       | 3         | --        | 1          | Field Training                           | EE508             | 5         |
|                                                       | 6         | 1         | 3          | Graduation Project                       | EE510             |           |
|                                                       | 21        | 10        | 17         | sum                                      |                   |           |

|                                                         |           |            |                                            |                   |           |
|---------------------------------------------------------|-----------|------------|--------------------------------------------|-------------------|-----------|
| <b>Elective Courses (Communications Specialization)</b> |           |            |                                            |                   |           |
| <b>P.</b>                                               | <b>L.</b> | <b>Cr.</b> | <b>Course Name</b>                         | <b>Course No.</b> | <b>s.</b> |
| 3                                                       | 2         | 3          | <b>Power Electronics I</b>                 | EE511             | 1         |
| 3                                                       | 2         | 3          | <b>Data Communications</b>                 | EE512             | 2         |
| --                                                      | 3         | 3          | <b>Radio and Radar</b>                     | EE513             | 3         |
| 3                                                       | 2         | 3          | <b>Computer Networks</b>                   | EE514             | 4         |
| --                                                      | 3         | 3          | <b>Wireless Communications</b>             | EE515             | 5         |
| --                                                      | 3         | 3          | <b>Information Theory and Cryptography</b> | EE516             | 6         |
| --                                                      | 3         | 3          | <b>Satellite Communications</b>            | EE517             | 7         |
| --                                                      | 3         | 3          | <b>Telephony and Digital Switches</b>      | EE506             | 8         |

### Compulsory Specialized Courses

|                                  |                   |
|----------------------------------|-------------------|
| <b>Course Name</b>               | <b>Course No.</b> |
| 1. Electromagnetics I            | EE302             |
| 2. Electric Circuits I           | EE202             |
| 3. Advanced Programming (MATLAB) | EE207             |
| 4. Electrical Materials Science  | EE201             |
| 5. Electric Circuits II          | EE203             |
| 6. Electromagnetics II           | EE303             |
| 7. Electrical Measurements       | EE205             |

|                                           |       |
|-------------------------------------------|-------|
| 8. Signals and Systems                    | EE310 |
| 9. Logic Circuit Design                   | EE304 |
| 10. Electronics I                         | EE206 |
| 11. Power Systems I                       | EE308 |
| 12. Automatic Control Systems I           | EE401 |
| 13. Electronics II                        | EE301 |
| 14. Communication Principles              | EE309 |
| 15. Digital Signal Processing (DSP)       | EE404 |
| 16. Automatic Control Systems II          | EE402 |
| 17. Digital Communications I              | EE504 |
| 18. Digital Electronic Circuits           | EE410 |
| 19. Electrical Machines I                 | EE307 |
| 20. Digital Communications II             | EE505 |
| 21. Advanced Electronic Circuits          | EE    |
| 22. Artificial Intelligence               | EE517 |
| 23. Digital Control Systems               | EE501 |
| 24. Microprocessor Systems                | EE409 |
| 25. Mobile Networks                       | EE507 |
| 26. Transmission Media and Optical Fibers | EE411 |
| 27. Antennas                              | EE503 |
| 28. Microwave Technology                  | EE502 |
| 29. Programmable Logic Controllers (PLC)  | EE407 |
| 30. Computer Applications (Arduino Uno)   | EE408 |
| 31. Introduction to Graduation Project    | EE519 |
| 32. Field Training                        | EE518 |
| 33. Graduation Project                    | EE520 |
| 106 credit                                |       |