



**Ministry of Higher Education and Scientific Research  
University of Mosul  
College of Engineering  
Electrical Engineering Department**

**Description of the academic program  
(Courses / First level - Second level -Third  
level)  
(Annual / Fourth Class)  
Of  
Electrical Engineering Department  
Power and Machines  
2021-2022**

## Description of the academic program

This academic program description provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available opportunities. It is accompanied by a description of each course within the program

|  |   |
|--|---|
| University of Mosul  | 1. Educational institution                      |
| College of Engineering/Department of Electrical Engineering  | 2. Scientific department/center                 |
| Power and Machines engineering   | 3. Name of the academic or professional program |
| Bachelor of Science in Electrical Engineering  | 4. Name of the final certificate                |
| Courses and Annual   | 5. Academic system annual/courses/others        |
| ABET   | 6. Accredited accreditation program             |
| Higher decisions   | 7. Other external influences                    |
| 2022   | 8. Date the description was prepared            |
| 9. Objectives of the academic program  |   |
| <ul style="list-style-type: none"> <li>● Emphasis on building the student's knowledge on solid foundations of basic sciences such as mathematics, physics and other engineering sciences related to the specialty of electronics and communications engineering.</li> </ul>                        |   |
| <ul style="list-style-type: none"> <li>● Establishing a knowledge background based on the various electrical engineering sciences, especially those related to the subject of specialization.</li> </ul>   |   |
| <ul style="list-style-type: none"> <li>● Training the student to address practical problems by applying the principles of engineering sciences related to the field of electronics and communications.</li> </ul>  |   |
| <ul style="list-style-type: none"> <li>● Introducing the student to his technical and social responsibilities necessary to practice design, operation and maintenance work for a wide range of electronic and communications systems to achieve the required goals, taking into account</li> </ul> |   |

various practical determinants such as economic, environmental, security and health determinants.

- Developing the student's practical skills in dealing with electronic and communications units, systems, and applications, starting from the level of designing and analyzing units to diagnosing problems and malfunctions.

- Consolidating contemporary skills and sciences, such as computer science, engineering software applications, and other modern ancillary sciences necessary to ensure the student's ability to develop and learn lifelong.

- Enhancing the student's ability and skills in technical communication, such as presentation, report writing, and explanation skills, as a member of a team or individually.

## 10. Required program outcomes and teaching, learning and evaluation methods

A- Cognitive objectives.

A1- Principles of basic, applied, and engineering sciences necessary for knowledge of electrical engineering (such as mathematics, physics, and mechanical engineering principles).

A2- Basic electrical engineering sciences, such as electrical circuits, electronic systems, electromagnetic fields, measurements, electrical devices, and digital systems.

A3 Foundations of electrical engineering and analysis of electrical circuits and equipment for electrical installations such as grounding and others.

A4- Electrical engineering sciences that support the specialty, such as the basics of electronics, communications, microprocessors, and control engineering.

A5- Foundations of professionalism and related communication skills, such as presenting and writing reports, with familiarity with economic, legal, health, social, and security determinants.

B - Skills objectives of the program:

B1 - Solving and formulating engineering problems in general, especially those related to electrical engineering.

B2 - Identifying and formulating engineering problems and applying mathematical knowledge, science, engineering methods, and creativity skills to solve problems in the field of power engineering and electrical machines.

B3 - Writing and implementing algorithms to solve power and electrical machine problems.

B4- Interpreting numerical data and applying mathematical methods to analyze problems.

B5- Preparing technical and operational specifications for energy components and systems and electrical appliances.

#### Teaching and learning methods

- Theoretical lectures
- Discussion sessions
- Laboratory experiments
- Computer laboratories

#### Evaluation methods

- Mid-term and final exams.
- Short exams.
- Reports
- Practical exams
- Diction

#### C- Thinking skills:

C1- Conducting and designing practical experiments for electrical systems, in addition to analyzing and interpreting practical results related to communications systems.

C2- Writing computer programs and using ready-made programs to solve problems related to the field of specialization.

C3- Applying modern engineering techniques, skills and tools to electronic and communications systems.

C4- Design, build and evaluate electronic systems using appropriate analysis tools and modern systems.

#### Teaching and learning methods

- Theoretical lectures
- Discussion sessions
- Laboratory experiments

|   |
|---|
| <ul style="list-style-type: none"> <li>●Computer laboratories</li> <li>●Projects</li> <li>●Industrial training</li> </ul>                     |
| Evaluation methods  |
| <ul style="list-style-type: none"> <li>●Semester and final exams</li> <li>●Short exams</li> <li>●Reports</li> <li>●Practical exams</li> </ul> |

|   |
|---|
| <p>D - General and qualifying transferable skills (other skills related to employability and personal development).</p> <p>D1- Work professionally and with ethical responsibility, individually or within a multidisciplinary team</p> <p>D2- Writing technical reports and presenting effectively</p> <p>D3- Effective use of information technology related to engineering applications in general and the field of electronics and communications in particular.</p> <p>D4-The possibility of starting scientific research projects in the future</p> |
| Teaching and learning methods   |
| <ul style="list-style-type: none"> <li>●Theoretical lectures</li> <li>●Discussion sessions</li> <li>●Laboratory experiments</li> <li>●Computer laboratories</li> <li>●Projects</li> <li>●Industrial training</li> </ul>   |
| Evaluation methods  |
| <ul style="list-style-type: none"> <li>●Semester and final exams</li> <li>●Short exams</li> <li>●Reports</li> <li>●Practical exams</li> </ul>   |

### 11. Planning for personal development

Student development, the teacher's program for student development, such as using the Internet, using IT, using safety methods in the laboratory, and developing the student's academic personality capable of competition, dialogue, and problem solving.

### 12.. Admission standard (establishing regulations related to college admission)

1. Central distribution by the Ministry of Higher Education determines those accepted into the College of Engineering.
2. The choices of those accepted into the departments are determined, and competition takes place between them on the basis of the total - then the total of the differentiation lessons.
3. Transfer from other departments and universities is accepted in accordance with higher controls and instructions.
4. After the first stage, students are divided between the Power and Machinery and Electronics and Communications branches based on their choice and the results of the first stage.

### 13.The most important sources of information about the program

- Developing the program through resources
- Higher directives
- What new sciences are developed in the field of specialization

### 14.Department vision, mission and goals

#### Department vision:

The department seeks to be one of the leading departments in the field of electrical engineering in Iraq and the region by graduating engineers specializing in electrical engineering in accordance with the latest approved scientific curricula and using the latest scientific teaching methods such as laboratories and modern teaching methods.

#### Department message

Providing educational programs characterized by depth in areas of specialization and comprehensiveness in engineering foundations. Disseminating engineering knowledge and contributing to its development in the field of specialization. In addition to serving industrial projects and specialists in all sectors of society.

#### Department objectives

- 1- Preparing competent engineering cadres in the specialization of electronics, communications, power and machinery engineering, as well as preparing specialized engineering cadres with higher degrees and for the same specializations above in order to contribute to the comprehensive development and urban renaissance in the country.
- 2- Contributing to providing academic, scientific, practical and applied services and consultations to all public, mixed and private sectors of the state through cooperation agreements as well as through the advisory office of the College of Engineering.
- 3- Preparing research that works and contributes to solving the engineering and industrial problems and obstacles facing industrial facilities and projects in the country.
- 4- Contributing to the dissemination and development of engineering knowledge and transferring the latest developments in the fields of electrical and electronic engineering to engineers in various fields of work by holding continuing education courses and training courses, as well as by publishing scientific research in local and international specialized scientific journals.
- 5- Developing teaching staff by sending a section of teaching staff on scientific delegations to participate in joint conferences, seminars and workshops with Arab, international or international institutions, as well as by granting sabbatical leaves to work in universities outside the country, which helps in exchanging and developing experiences.
- 6- Participate in organizing and holding conferences, seminars, workshops and scientific discussions inside and outside the country.

## 15. Program structure

a) Undergraduate

Courses / College of Engineering / University of Mosul / First level for the academic year 2021-2022 / Department of Electrical Engineering

| Fall Semester / First Level   |         |             |       |                 |                   |                               |            |                         |
|-------------------------------|---------|-------------|-------|-----------------|-------------------|-------------------------------|------------|-------------------------|
| Notes                         | Code    | Pre-request | Units | Practical hours | Theoretical hours | Subject                       | Type       |                         |
|                               | UOMC101 | -           | 3     | -               | 3                 | English Language              | Compulsory | University requirements |
|                               | UOMC102 | -           | 3     | 2               | 2                 | Computer                      | Compulsory |                         |
|                               | UOMC103 | -           | 2     | -               | 2                 | Rights and Freedoms           | Compulsory |                         |
|                               | ENGC121 | -           | 3     | -               | 3                 | Calculus I                    | Compulsory | College requirements    |
|                               | ENGC123 | -           | 1     | 3               | -                 | Engineering Drawings          | Compulsory |                         |
| Compulsory for Dept. Students | ENGE133 | -           | 2     | -               | 2                 | Physics                       | Elective   |                         |
|                               | ELCA100 | -           | 4     | 2               | 3                 | Electrical Circuit Analysis I | Compulsory | Department requirements |
|                               |         |             | 18    | 7               | 15                | Total Hours                   |            |                         |



| Spring Semester / First Level                                     |          |                               |       |                 |                   |                                |            |                         |
|---|----------|-------------------------------|-------|-----------------|-------------------|--------------------------------|------------|-------------------------|
| Notes   | Code     | Pre-request                   | Units | Practical hours | Theoretical hours | Subject                        | Type       |                         |
|   | UOMC 100 | -                             | 2     | -               | 2                 | Arabic Language                | Compulsory | University requirements |
| The student should select one subject only (no. of units =2 only) | -        | -                             | 2     | -               | 2                 | Manufacturing Processes        | Elective   |                         |
|   | -        | -                             |       |                 |                   | Environmental Pollution        | Elective   |                         |
|   | -        | -                             |       |                 |                   | Information Technology         | Elective   |                         |
|   | ENGC122  | Calculus I                    | 3     | -               | 3                 | Calculus II                    | Compulsory | College requirements    |
|   | ENGC124  | Engineering Drawing           | 1     | 3               | -                 | Auto-CAD                       | Compulsory |                         |
| Compulsory for Dept. Students                                     | ENGE132  | -                             | 3     | -               | 3                 | Engineering Mechanics          | Elective   |                         |
|   | ELCA 150 | Electrical Circuit Analysis I | 4     | 2               | 3                 | Electrical Circuit Analysis II | Compulsory | Department requirements |
|   | PHEC151  | Physics                       | 3     | -               | 3                 | Electronic Physics             | Compulsory |                         |
|   |          |                               | 18    | 5               | 16                | Total Hours                    |            |                         |

Courses / College of Engineering / University of Mosul / Second Level for the academic year 2021-2022 / Department of  
Electrical Engineering

| Fall Semester / Second Level – P&M  |          |  |       |                 |                   |                                   |            |                         |
|---|----------|--|-------|-----------------|-------------------|-----------------------------------|------------|-------------------------|
| Notes   | Code     | Pre-request                                    | Units | Practical hours | Theoretical hours | Subject                           | Type       |                         |
| English Subject in this level equal 1 unit because it was 3 units in first level. |          | -  | 1     | -               | 1                 | English Language-Pre intermediate | Compulsory | University requirements |
| Compulsory for Dept. Students   | ENGE228  | I, II Calculus                                 | 3     | -               | 3                 | Engineering Mathematics I         | Elective   | College requirements    |
|   | ENET202  | Electrical Circuit Analysis II, Calculus I, II | 4     | -               | 4                 | Electric Networks                 | Compulsory | Department requirements |
|   | ELTR204  | Electrical Circuit Analysis II, Calculus II    | 3     | -               | 3                 | Electrical Transformers           | Compulsory |                         |
|   | COMP206  | Computer                                       | 3     | 2               | 2                 | Computer Programming              | Compulsory |                         |
|   | ELAB210  | Electrical Circuit Analysis II                 | 1     | 2               | -                 | Electrical Engineering Lab I      | Compulsory |                         |
| The student should select one subject only (no. of units =2 only)                 | ECFU 212 | Physics of Electronics                         | 2     | -               | 2                 | Electronics Fundamentals          | Elective   |                         |
|   | ELCI214  | Physics of Electronics                         |       |                 |                   | Electronic Circuits               | Elective   |                         |
|   |          |  | 18    | 4               | 16                | Total Hours                       |            |                         |

Spring Semester / Second Level – P&M

| Notes   | Code     | Pre-request   | Units | Practical hours | Theoretical hours | Subject                           | Type       |                         |
|---|----------|---|-------|-----------------|-------------------|-----------------------------------|------------|-------------------------|
| Compulsory for Dept. Students                                     | ENGE 230 | Calculus I  | 3     | -               | 3                 | Engineering Mathematics II        | Elective   | College requirements    |
|   | PEXT 250 | Electrical Circuit Analysis II                            | 3     | -               | 3                 | Electronics I Power               | Compulsory | Department requirements |
|   | SIGS 252 | Electrical Circuit Analysis ,I<br>Calculus II             | 2     | -               | 2                 | Systems & Signals                 | Compulsory |                         |
|   | EMGT 254 | Electrical Circuit Analysis ,II<br>Calculus I             | 3     | -               | 3                 | Electromagnetic Theory            | Compulsory |                         |
|   | DCMA 256 | Electrical Transformers<br>Electrical Circuit Analysis II | 3     | -               | 3                 | DC Machines                       | Compulsory |                         |
|   | DISS 258 | Electrical Transformers<br>Electrical Circuit Analysis II | 2     | -               | 2                 | Distribution Systems              | Compulsory |                         |
|   | ELAB 260 | Electrical Engineering Lab I                              | 1     | 2               | -                 | Electrical Engineering Lab II     | Compulsory |                         |
| The student should select one subject only (no. of units =2 only) | MODS 262 | Computer Programming                                      | 2     | 2               | 1                 | Basics of Modeling and Simulation | Elective   |                         |
|   | COAP 264 | Computer Programming                                      |       |                 |                   | Computer Applications             |            |                         |
|   |          |   | 18    | 4               | 16                | Total Hours                       |            |                         |

Courses / College of Engineering / University of Mosul / Third level for the academic year 2021-2022 / Department of  
Electrical Engineering

| Fall Semester / Third Level – P&M                                 |          |                                |       |                 |                   |                            |            |                         |
|---|----------|--------------------------------|-------|-----------------|-------------------|----------------------------|------------|-------------------------|
| Notes   | Code     | Pre-request                    | Units | Practical hours | Theoretical hours | Subject                    | Type       |                         |
| Compulsory for Dept. Students                                     | ENGE 320 | Calculus I, II                 | 2     | -               | 2                 | Numerical Analysis         | Elective   | College requirements    |
|   | ENGC 327 | -                              | 2     | -               | 2                 | Statistics                 | Compulsory |                         |
|   | TRCY 300 | Electrical Circuit Analysis II | 3     | -               | 3                 | Transmission Systems       | Compulsory | Department requirements |
|   | PECT 302 | Power Electronics I            | 3     | -               | 3                 | Power Electronics          | Compulsory |                         |
|   | INMA 304 | Electrical Transformers        | 3     | -               | 3                 | Induction Machines         | Compulsory |                         |
|   | ELAB 306 | Electrical Engineering Lab II  | 2     | 6               | -                 | & Power Machines Lab I     | Compulsory |                         |
| The student should select one subject only (no. of units =2 only) | ELCD 312 | Electrical Circuit Analysis I  | 2     | -               | 2                 | Electrical Circuits Design | Elective   |                         |
|   | RENE 316 | Electrical Circuit Analysis I  |       |                 |                   | Renewable Energy           |            |                         |
| The student should select one subject only (no. of units =2 only) | DSIP 405 | Signals & Systems              | 2     | -               | 2                 | Digital Signal Processing  | Elective   |                         |
|   | MICP 316 | Digital Techniques             |       |                 |                   | Microprocessors            |            |                         |
|   |          |                                | 19    | 6               | 17                | Total Hours                |            |                         |

| Spring Semester / Third Level – P&M                  |          |                               |       |                 |                   |                                      |            |                         |
|--|----------|-------------------------------|-------|-----------------|-------------------|--------------------------------------|------------|-------------------------|
| Notes  | Code     | Pre-request                   | Units | Practical hours | Theoretical hours | Subject                              | Type       |                         |
|  | -        | -                             | 2     | -               | 2                 | English Language Intermediate        | Compulsory | University requirements |
|  | ENGC 326 | -                             | 2     | -               | 2                 | Engineering Economic                 | Compulsory | College requirements    |
|  | MINC 350 | Electrical Circuit Analysis I | 3     | -               | 3                 | Electrical Measurements              | Compulsory | Department requirements |
|  | ICOS 352 | Signals & Systems             | 3     | -               | 3                 | Introduction to Control Systems      | Compulsory |                         |
|  | ECSS 354 | Signals & Systems             | 2     | -               | 2                 | Electronic and Communication Systems | Compulsory |                         |
|  | CYMA 356 | Electrical Transformers       | 3     | -               | 3                 | Synchronous Machines                 | Compulsory |                         |
|  | PLAB 355 | Power and Machine Lab 1       | 2     | 6               | -                 | Lab II Machines & Power              | Compulsory |                         |
| يختار الطالب مقرر واحد ، عدد الوحدات المطلوبة 2 وحدة | PCON 362 | Digital Techniques            | 2     | -               | 2                 | Programmable Controller              | Elective   |                         |
|  | AINT 364 | Signals & Systems             |       |                 |                   | Artificial Intelligence              |            |                         |
|  |          |                               | 19    | 6               | 17                | Total Hours                          |            |                         |

Note: The student is required to complete the summer training after the end of the second semester of the third level

Annual / College of Engineering / University of Mosul / Fourth class for the academic year 2021-2022 / Department of Electrical Engineering

| Course No. | Subject                                | First Term |        |      | Second Term |        |      | Units No. |
|------------|--|------------|--------|------|-------------|--------|------|-----------|
|            |  | Theo.      | Pract. | App. | Theo.       | Pract. | App. |           |
| EEP 401    | Power System Analysis                  | 2          | -      | 2    | 2           | -      | 2    | 4         |
| EEP402     | Protection & Operation of PS           | 2          | -      | 1    | 2           | -      | 1    | 4         |
| EEP 403    | Advanced Electrical Machines           | 3          | -      | 1    | 3           | -      | 1    | 6         |
| EEP 404    | High Voltage Systems                   | 2          | -      | -    | 2           | -      | -    | 4         |
| EEP 405    | Final Year Project                     | 1          | 3      | -    | 1           | 3      | -    | 4         |
| EEP 406    | Power & Machines Lab.                  | -          | 6      | -    | -           | 6      | -    | 4         |
| EEP 407    | Control Engineering                    | 3          | -      | 1    | 3           | -      | 1    | 6         |
| EEP 408    | (Generation Systems) Elective Subjects | 2          | -      | -    | 2           | -      | -    | 4         |
| Total      |  | 15         | 9      | 5    | 15          | 9      | 5    | 36        |
|            |  | 29         |        |      | 29          |        |      |           |

Below are the links to download the curriculum vocabulary for the Department of Electrical Engineering:

| Study subject file  | Subject                        | Academic level | No. |
|---|--------------------------------|----------------|-----|
| <a href="https://drive.google.com/file/d/1DR87hpgb4O90QCAgpLOqzT4RnHWLcZk6/view?usp=sharing">https://drive.google.com/file/d/1DR87hpgb4O90QCAgpLOqzT4RnHWLcZk6/view?usp=sharing</a> | English                        | First Level    | 1   |
| <a href="https://drive.google.com/file/d/17gygpB7bSwiYYCnaDvPHRo6DRnOLwWpM/view?usp=sharing">https://drive.google.com/file/d/17gygpB7bSwiYYCnaDvPHRo6DRnOLwWpM/view?usp=sharing</a> | Calculus I                     |                | 2   |
| <a href="https://drive.google.com/file/d/15C1uwqZGQVag6CrvCSUGRbJhnbS7Wxj/view?usp=sharing">https://drive.google.com/file/d/15C1uwqZGQVag6CrvCSUGRbJhnbS7Wxj/view?usp=sharing</a>   | Engineering                    |                | 3   |
| <a href="https://drive.google.com/file/d/1iU9IK4STDVO-L-bGjqsxnJzN5qvs5MnK/view?usp=sharing">https://drive.google.com/file/d/1iU9IK4STDVO-L-bGjqsxnJzN5qvs5MnK/view?usp=sharing</a> | physics                        |                | 4   |
| <a href="https://drive.google.com/file/d/1MXzGAP97DujN6UHJj28pKLEniv7CIZOx/view?usp=sharing">https://drive.google.com/file/d/1MXzGAP97DujN6UHJj28pKLEniv7CIZOx/view?usp=sharing</a> | Electrical Circuit Analysis I  |                | 5   |
| <a href="https://drive.google.com/file/d/1ouEGwOcmFx12sc1_nskdLAmKEHtnIF8P/view?usp=sharing">https://drive.google.com/file/d/1ouEGwOcmFx12sc1_nskdLAmKEHtnIF8P/view?usp=sharing</a> | Environmental Pollution        |                | 6   |
| <a href="https://drive.google.com/file/d/1IRKW2psvkD_QCOSiNh-8WQ752hI3IS_p/view?usp=sharing">https://drive.google.com/file/d/1IRKW2psvkD_QCOSiNh-8WQ752hI3IS_p/view?usp=sharing</a> | Calculus II                    |                | 7   |
| <a href="https://drive.google.com/file/d/1A2pC1QafoDSn8_VHhkJPSbx9Zwc_bnn/view?usp=sharing">https://drive.google.com/file/d/1A2pC1QafoDSn8_VHhkJPSbx9Zwc_bnn/view?usp=sharing</a>   | Auto-CAD                       |                | 8   |
| <a href="https://drive.google.com/file/d/17O_LmYM-JWaRDqnh-x0t4G2CKqoT7iMb/view?usp=sharing">https://drive.google.com/file/d/17O_LmYM-JWaRDqnh-x0t4G2CKqoT7iMb/view?usp=sharing</a> | Engineering Mechanics          |                | 9   |
| <a href="https://drive.google.com/file/d/12x8kYJhKt7C6uzDvmBqSBMfsiGe9IDD/view?usp=sharing">https://drive.google.com/file/d/12x8kYJhKt7C6uzDvmBqSBMfsiGe9IDD/view?usp=sharing</a>   | Electrical Circuit Analysis II |                | 10  |
| <a href="https://drive.google.com/file/d/1hCeUzqqbA_KHi3SfJ7Y89O7E7IK5W8_I/view?usp=sharing">https://drive.google.com/file/d/1hCeUzqqbA_KHi3SfJ7Y89O7E7IK5W8_I/view?usp=sharing</a> | Electronics physics            |                | 11  |

| Study subject file  | Subject                       | Academic level | No. |
|---|-------------------------------|----------------|-----|
| <a href="https://drive.google.com/file/d/1qIIHUpUHfISD5sO78kgRaIC6nGEzxW_A/view?usp=sharing">https://drive.google.com/file/d/1qIIHUpUHfISD5sO78kgRaIC6nGEzxW_A/view?usp=sharing</a>   | Engineering Mathematics I     | Second Level   | 1   |
| <a href="https://drive.google.com/file/d/1RnJTtYGMkDCG-4Lo0ZfJQI6z7Lbkx58Ws/view?usp=sharing">https://drive.google.com/file/d/1RnJTtYGMkDCG-4Lo0ZfJQI6z7Lbkx58Ws/view?usp=sharing</a> | Electrical Engineering Lab I  |                | 2   |
| <a href="https://drive.google.com/file/d/1wtBTLNiLz4TmMiE8IkU7FSxe5H94m89p/view?usp=sharing">https://drive.google.com/file/d/1wtBTLNiLz4TmMiE8IkU7FSxe5H94m89p/view?usp=sharing</a>   | Solar Cell Systems            |                | 3   |
| <a href="https://drive.google.com/file/d/16N6TS1Wwnn3OsNjK1XfquvI14AxUY2_G/view?usp=sharing">https://drive.google.com/file/d/16N6TS1Wwnn3OsNjK1XfquvI14AxUY2_G/view?usp=sharing</a>   | Electronic circuits           |                | 4   |
| <a href="https://drive.google.com/file/d/1N3G7S4ELCPVRsG4Ps-Renzs1PK5oU5Bx/view?usp=sharing">https://drive.google.com/file/d/1N3G7S4ELCPVRsG4Ps-Renzs1PK5oU5Bx/view?usp=sharing</a>   | Digital technologies          |                | 5   |
| <a href="https://drive.google.com/file/d/1gng3L-vcVS8RuXZkS7D5OvxSllHm9oYe/view?usp=sharing">https://drive.google.com/file/d/1gng3L-vcVS8RuXZkS7D5OvxSllHm9oYe/view?usp=sharing</a>   | Electronic basics             |                | 6   |
| <a href="https://drive.google.com/file/d/1zY_HVe0MXwOCMOKjS2EeS8SXqLRcqzOU/view?usp=sharing">https://drive.google.com/file/d/1zY_HVe0MXwOCMOKjS2EeS8SXqLRcqzOU/view?usp=sharing</a>   | Analog electronics            |                | 7   |
| <a href="https://drive.google.com/file/d/1uHFt9O2_Z2LV0a7RbaaxopNW1CJeNrto/view?usp=sharing">https://drive.google.com/file/d/1uHFt9O2_Z2LV0a7RbaaxopNW1CJeNrto/view?usp=sharing</a>   | Signals and systems           |                | 8   |
| <a href="https://drive.google.com/file/d/1zwqatGEreTZwgOF05A1p5O3Ppwmfg7mD/view?usp=sharing">https://drive.google.com/file/d/1zwqatGEreTZwgOF05A1p5O3Ppwmfg7mD/view?usp=sharing</a>   | Machines and power systems    |                | 9   |
| <a href="https://drive.google.com/file/d/1ajIshWvzKxpP2_bpM3Eiet1ddZrqqRIp/view?usp=sharing">https://drive.google.com/file/d/1ajIshWvzKxpP2_bpM3Eiet1ddZrqqRIp/view?usp=sharing</a>   | Electrical Engineering Lab II |                | 10  |
| <a href="https://drive.google.com/file/d/1L7LNBWtuN_m0cge2ACv_d-9wJLlnwWSO/view?usp=sharing">https://drive.google.com/file/d/1L7LNBWtuN_m0cge2ACv_d-9wJLlnwWSO/view?usp=sharing</a>   | Power Electronics I           |                | 11  |
| <a href="https://drive.google.com/file/d/1wJqLTaRKcel1d10uvMRSLK0zpUufgTID/view?usp=sharing">https://drive.google.com/file/d/1wJqLTaRKcel1d10uvMRSLK0zpUufgTID/view?usp=sharing</a>   | Distribution systems          |                | 12  |



| Study subject file  | Subject                          | Academic level | No . |
|---|----------------------------------|----------------|------|
| <a href="https://drive.google.com/file/d/1kM6tP2zipr6DtTD5yPRVwPPAr0eMcbUi/view?usp=sharing">https://drive.google.com/file/d/1kM6tP2zipr6DtTD5yPRVwPPAr0eMcbUi/view?usp=sharing</a>   | Numerical analyses               | Third Level    | 1    |
| <a href="https://drive.google.com/file/d/1601fYEKM08AMhSqtIKRZiBypd38lWvnX/view?usp=sharing">https://drive.google.com/file/d/1601fYEKM08AMhSqtIKRZiBypd38lWvnX/view?usp=sharing</a>   | Statistics                       |                | 2    |
| <a href="https://drive.google.com/file/d/1QEE97mWD1BJDo7e3xeuHt-213u8mTlIo6/view?usp=sharing">https://drive.google.com/file/d/1QEE97mWD1BJDo7e3xeuHt-213u8mTlIo6/view?usp=sharing</a>   | Digital communications 1         |                | 3    |
| <a href="https://drive.google.com/file/d/1Ad5KCWfKVvvnC7SovGyDjsCNDuKbszFn/view?usp=sharing">https://drive.google.com/file/d/1Ad5KCWfKVvvnC7SovGyDjsCNDuKbszFn/view?usp=sharing</a>   | & Radiation Propagation          |                | 4    |
| <a href="https://drive.google.com/file/d/1z_vUNZ6mqt1hQ_Tbv96UKPtZOabtFLNq/view?usp=sharing">https://drive.google.com/file/d/1z_vUNZ6mqt1hQ_Tbv96UKPtZOabtFLNq/view?usp=sharing</a>   | Electronic Devices               |                | 5    |
| <a href="https://docs.google.com/document/d/18w5J2PXDAJiSdpxUWXlGUcsmT5UtDcX6/edit?usp=sharing&amp;sd=true&amp;rtpof=true&amp;645849946868231">https://docs.google.com/document/d/18w5J2PXDAJiSdpxUWXlGUcsmT5UtDcX6/edit?usp=sharing&amp;sd=true&amp;rtpof=true&amp;645849946868231</a> | Digital Electronics              |                | 6    |
| <a href="https://drive.google.com/file/d/1kdlGfyv_rpC-gq_v-m5XYUI_55YQ4DZP/view?usp=sharing">https://drive.google.com/file/d/1kdlGfyv_rpC-gq_v-m5XYUI_55YQ4DZP/view?usp=sharing</a>   | E & C Lab 1                      |                | 7    |
| <a href="https://drive.google.com/file/d/1xqj5-qYPm8BBPKmSjaonSSXmetGgHX5R/view?usp=sharing">https://drive.google.com/file/d/1xqj5-qYPm8BBPKmSjaonSSXmetGgHX5R/view?usp=sharing</a>   | Power electronics                |                | 8    |
| <a href="https://drive.google.com/file/d/1jvvJYS0zevDLMgIsk6XvPOg0X--bAws/view?usp=sharing">https://drive.google.com/file/d/1jvvJYS0zevDLMgIsk6XvPOg0X--bAws/view?usp=sharing</a>   | Special topics in communications |                | 9    |
| <a href="https://drive.google.com/file/d/1RDDiD_uAkgLAa2XUe1srkaZc50udHqZ6/view?usp=sharing">https://drive.google.com/file/d/1RDDiD_uAkgLAa2XUe1srkaZc50udHqZ6/view?usp=sharing</a>   | Renewable energy                 |                | 10   |
| <a href="https://drive.google.com/file/d/1COFPXowqS0ROWNC0LD7iLhtimXOsd5Zm/view?usp=sharing">https://drive.google.com/file/d/1COFPXowqS0ROWNC0LD7iLhtimXOsd5Zm/view?usp=sharing</a>   | Electrical circuit design        |                | 11   |
| <a href="https://drive.google.com/file/d/1cuF9V9rD9Cy_GuV-ffACWX_rFoe_EcU3/view?usp=sharing">https://drive.google.com/file/d/1cuF9V9rD9Cy_GuV-ffACWX_rFoe_EcU3/view?usp=sharing</a>   | Transmission Systems             |                | 12   |

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|---|---------------------------------------|----|
| <a href="https://drive.google.com/file/d/1LTZcV6_fTeaxP1mA_MhZmUxXdaDw8ur6/view?usp=sharing">https://drive.google.com/file/d/1LTZcV6_fTeaxP1mA_MhZmUxXdaDw8ur6/view?usp=sharing</a> | Power electronics 2                   | 13 |
| <a href="https://drive.google.com/file/d/16_j2IJHvCbQ2wplArId2cAdOEy_QM1dI/view?usp=sharing">https://drive.google.com/file/d/16_j2IJHvCbQ2wplArId2cAdOEy_QM1dI/view?usp=sharing</a> | Induction machines                    | 14 |
| <a href="https://drive.google.com/file/d/1t_9obCvG7wQ4WYeXElj7XnRfNDXL7OxL/view?usp=sharing">https://drive.google.com/file/d/1t_9obCvG7wQ4WYeXElj7XnRfNDXL7OxL/view?usp=sharing</a> | P & M Lab 1                           | 15 |
| <a href="https://drive.google.com/file/d/1fTuLteSwAPo0RpW9HPbp3eX5CTE7C2u9/view?usp=sharing">https://drive.google.com/file/d/1fTuLteSwAPo0RpW9HPbp3eX5CTE7C2u9/view?usp=sharing</a> | Microprocessors                       | 16 |
| <a href="https://drive.google.com/file/d/1VdONsR0I-Xvimmzqnpw27m_ke8XVoj7k/view?usp=sharing">https://drive.google.com/file/d/1VdONsR0I-Xvimmzqnpw27m_ke8XVoj7k/view?usp=sharing</a> | English language - intermediate       | 17 |
| <a href="https://drive.google.com/file/d/1tobfkDQcCH6cq303rQNbZU5iQ-j197IS/view?usp=sharing">https://drive.google.com/file/d/1tobfkDQcCH6cq303rQNbZU5iQ-j197IS/view?usp=sharing</a> | Engineering economics                 | 18 |
| <a href="https://drive.google.com/file/d/1rW_YiuOq5KB4EFSSA6zCFjqEIE017DpC/view?usp=sharing">https://drive.google.com/file/d/1rW_YiuOq5KB4EFSSA6zCFjqEIE017DpC/view?usp=sharing</a> | Introduction to control systems       | 19 |
| <a href="https://drive.google.com/file/d/1jMMktsiKSeCOsZr9kxLSbvvSvwP1mfkp/view?usp=sharing">https://drive.google.com/file/d/1jMMktsiKSeCOsZr9kxLSbvvSvwP1mfkp/view?usp=sharing</a> | Computer architecture                 | 20 |
| <a href="https://drive.google.com/file/d/1XA-gT1a5x6MhI6mCu7Pve2-YP0PVCqli/view?usp=sharing">https://drive.google.com/file/d/1XA-gT1a5x6MhI6mCu7Pve2-YP0PVCqli/view?usp=sharing</a> | Digital communications 2              | 21 |
| <a href="https://drive.google.com/file/d/1OMEMOKnxU9CXuVhownjyF2RrEq1yp5I/view?usp=sharing">https://drive.google.com/file/d/1OMEMOKnxU9CXuVhownjyF2RrEq1yp5I/view?usp=sharing</a>   | Programmable controllers              | 22 |
| <a href="https://drive.google.com/file/d/1pLUWBVfiOmAICps1vTWREnsqN8v8r356/view?usp=sharing">https://drive.google.com/file/d/1pLUWBVfiOmAICps1vTWREnsqN8v8r356/view?usp=sharing</a> | Electronic and communications systems | 23 |
| <a href="https://drive.google.com/file/d/1l_YiE1OpuvCm_3fXTAHjHJJVYFCVXRuT/view?usp=sharing">https://drive.google.com/file/d/1l_YiE1OpuvCm_3fXTAHjHJJVYFCVXRuT/view?usp=sharing</a> | Synchronous machines                  | 24 |

| Study subject file  | Subject                            | Academic level | No. |
|---|------------------------------------|----------------|-----|
| <a href="https://drive.google.com/file/d/1UIJsaIcW4iD_nA2k7OBq1JhWIwHD67vh/view?usp=sharing">https://drive.google.com/file/d/1UIJsaIcW4iD_nA2k7OBq1JhWIwHD67vh/view?usp=sharing</a> | Satellite communications           | Fourth Level   | 1   |
| <a href="https://drive.google.com/file/d/17-pNmZ5uOCG-rr2_qHU7P75FJTLh9Yo-/view?usp=sharing">https://drive.google.com/file/d/17-pNmZ5uOCG-rr2_qHU7P75FJTLh9Yo-/view?usp=sharing</a> | Control systems analysis           |                | 2   |
| <a href="https://drive.google.com/file/d/1Ns0G_ozJ9YZdg-U3ARZDgSE2TCCVbnxa/view?usp=sharing">https://drive.google.com/file/d/1Ns0G_ozJ9YZdg-U3ARZDgSE2TCCVbnxa/view?usp=sharing</a> | computer networks                  |                | 3   |
| <a href="https://drive.google.com/file/d/1zP-3T7NNtzyIulSnIh3KQYBAWwn_rRE/view?usp=sharing">https://drive.google.com/file/d/1zP-3T7NNtzyIulSnIh3KQYBAWwn_rRE/view?usp=sharing</a>   | Digital signal processing          |                | 4   |
| <a href="https://drive.google.com/file/d/1HgOj5zJ1n8EOtwrgqT8WxhGB7qFIORTp/view?usp=sharing">https://drive.google.com/file/d/1HgOj5zJ1n8EOtwrgqT8WxhGB7qFIORTp/view?usp=sharing</a> | Microwaves                         |                | 5   |
| <a href="https://drive.google.com/file/d/1IVBhbao6xYD4CZjZ66jNDg-CYVon-10j/view?usp=sharing">https://drive.google.com/file/d/1IVBhbao6xYD4CZjZ66jNDg-CYVon-10j/view?usp=sharing</a> | Fiber optic communications systems |                | 6   |
| <a href="https://drive.google.com/file/d/1Yty_518XCfMbSk5-L4vLI4ImGgC1kUKC/view?usp=sharing">https://drive.google.com/file/d/1Yty_518XCfMbSk5-L4vLI4ImGgC1kUKC/view?usp=sharing</a> | Power systems analysis             |                | 7   |
| <a href="https://drive.google.com/file/d/1Yt6_x0-JF7JiUXAMVt4ogGr4pEy9YD_/view?usp=sharing">https://drive.google.com/file/d/1Yt6_x0-JF7JiUXAMVt4ogGr4pEy9YD_/view?usp=sharing</a>   | Single phase induction motors      |                | 8   |
| <a href="https://drive.google.com/file/d/1ORPbvg-2wK_rDM5o82qIeZsPIBpOAKCz/view?usp=sharing">https://drive.google.com/file/d/1ORPbvg-2wK_rDM5o82qIeZsPIBpOAKCz/view?usp=sharing</a> | Power generating stations          |                | 9   |
| <a href="https://drive.google.com/file/d/1eOCNqeqWGEkUdUiLJuvxBMoAmTJqo2gi/view?usp=sharing">https://drive.google.com/file/d/1eOCNqeqWGEkUdUiLJuvxBMoAmTJqo2gi/view?usp=sharing</a> | P &M Lab 3                         |                | 10  |
| <a href="https://drive.google.com/file/d/1vphUE5imqC2xbcFH3kVIvaSTlgLHipNb/view?usp=sharing">https://drive.google.com/file/d/1vphUE5imqC2xbcFH3kVIvaSTlgLHipNb/view?usp=sharing</a> | High Voltage DC                    |                | 11  |

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| <a href="https://drive.google.com/file/d/1AOtvrAiTNnOiBuveL6hknupooAJVa1PP/view?usp=sharing">https://drive.google.com/file/d/1AOtvrAiTNnOiBuveL6hknupooAJVa1PP/view?usp=sharing</a> | Smart power grid systems             | 12 |
| <a href="https://drive.google.com/file/d/16p-LKT_am7qUltmw-Jsc6hrU3Fz1OC1I/view?usp=sharing">https://drive.google.com/file/d/16p-LKT_am7qUltmw-Jsc6hrU3Fz1OC1I/view?usp=sharing</a> | Professional ethics                  | 13 |
| <a href="https://drive.google.com/file/d/1iA5r6wvKnbbJvTvVUf1T-iK-QmZ0-Dtq/view?usp=sharing">https://drive.google.com/file/d/1iA5r6wvKnbbJvTvVUf1T-iK-QmZ0-Dtq/view?usp=sharing</a> | English language - post-intermediate | 14 |
| <a href="https://drive.google.com/file/d/1LJd7jakMvc_xgUiQiWH3Sd5Wk20r7CeF/view?usp=sharing">https://drive.google.com/file/d/1LJd7jakMvc_xgUiQiWH3Sd5Wk20r7CeF/view?usp=sharing</a> | Engineering Management               | 15 |
| <a href="https://drive.google.com/file/d/1e58x2ir0T1HENI3g24yAi7TNDQFfihbA/view?usp=sharing">https://drive.google.com/file/d/1e58x2ir0T1HENI3g24yAi7TNDQFfihbA/view?usp=sharing</a> | Microelectronics                     | 16 |
| <a href="https://drive.google.com/file/d/1iJTuzgjhmk7h5Wa09AUHop_7Eu2LrJ0b/view?usp=sharing">https://drive.google.com/file/d/1iJTuzgjhmk7h5Wa09AUHop_7Eu2LrJ0b/view?usp=sharing</a> | Mobile communications                | 17 |
| <a href="https://drive.google.com/file/d/1VMwW7LI3haczXbr78owi68gwzUkengVt/view?usp=sharing">https://drive.google.com/file/d/1VMwW7LI3haczXbr78owi68gwzUkengVt/view?usp=sharing</a> | Wireless network security            | 18 |
| <a href="https://drive.google.com/file/d/1hVqRjZee0xDvrK-pA3sxcdCd5AGNqwnF/view?usp=sharing">https://drive.google.com/file/d/1hVqRjZee0xDvrK-pA3sxcdCd5AGNqwnF/view?usp=sharing</a> | Interface systems                    | 19 |
| <a href="https://drive.google.com/file/d/1EhQfqdIcrNE0333Nh0HFLwkZm0qCnV_M/view?usp=sharing">https://drive.google.com/file/d/1EhQfqdIcrNE0333Nh0HFLwkZm0qCnV_M/view?usp=sharing</a> | Protection and operation systems     | 20 |
| <a href="https://drive.google.com/file/d/1qtcVhV0Sd0rcVBkq2A2Xotqtir1ZZRFJ/view?usp=sharing">https://drive.google.com/file/d/1qtcVhV0Sd0rcVBkq2A2Xotqtir1ZZRFJ/view?usp=sharing</a> | High Voltage engineering             | 21 |
| <a href="https://drive.google.com/file/d/1NzS0MJUyQq1D4POk55X-VihFH1LNC8mx/view?usp=sharing">https://drive.google.com/file/d/1NzS0MJUyQq1D4POk55X-VihFH1LNC8mx/view?usp=sharing</a> | Special electrical machines          | 22 |

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| <a href="https://drive.google.com/file/d/139LJSMaiQMsQoQqK5oR-dmWMEcWzMpPT/view?usp=sharing">https://drive.google.com/file/d/139LJSMaiQMsQoQqK5oR-dmWMEcWzMpPT/view?usp=sharing</a> | P & M Lab 4     |  | 23 |
| <a href="https://drive.google.com/file/d/118P3wwdj8KmWo3q7yIcYr-sXsAei_RiY/view?usp=sharing">https://drive.google.com/file/d/118P3wwdj8KmWo3q7yIcYr-sXsAei_RiY/view?usp=sharing</a> | Electric Drives |  | 24 |