2024-2025 Engineering Student Guide

Private Higher School of Applied Sciences and Technology of Gabes, Tunisia

1. Presentation of ESSAT

ESSAT Gabès was established in 2007 around a project that reconciles high-level pedagogy, personal initiatives, professional behavior development, and the implementation of innovative means in the field of higher education. The school is a private higher education institution accredited by the state under number 05/2007.

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Mission of ESSAT:

- Train competent engineers.
- Develop scientific research and continuing education.
- Collaborate with the socio-economic sector for technological transfer.

The Program Learning Outcomes (PLOs) of an Electrical Engineering program outline the knowledge, skills, and competencies that students are expected to achieve by the time they graduate. These outcomes are generally aligned with national and international accreditation standard.

The list of PLOs for an Electrical Engineering program:

1. Engineering Knowledge
Graduates will demonstrate a solid foundation in mathematics, science, and engineering fundamentals and apply this knowledge to solve complex electrical engineering problems.

2. Problem Analysis
Graduates will be able to identify, formulate, and analyze electrical engineering problems using appropriate methodologies and tools to derive valid conclusions based on data.

3. Design/Development of Solutions
Graduates will have the ability to design and develop electrical engineering solutions that meet specified needs, considering safety, environmental, societal and Industrial constraints.

4. Investigation
Graduates will be proficient in conducting investigations of complex electrical engineering problems using research-based knowledge and methodologies, including the design and execution of experiments, data collection, and interpretation.

5. Modern Tool Usage
Graduates will use modern electrical engineering tools, techniques, and resources, including IT tools for complex engineering activities, with an understanding of their limitations.

6. The Engineer and Society
Graduates will recognize and assess the societal, safety, and cultural issues relevant to electrical engineering practice and understand the responsibilities as engineers in addressing these.

7. Environment and Sustainability
Graduates will understand the impact of electrical engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for, sustainable development.

8. Ethics
Graduates will apply ethical principles and commit to professional ethics and responsibilities, considering the norms of engineering practice.

9. Individual and Team Work
Graduates will function effectively both as individuals and as members or leaders in diverse teams, showing initiative and responsibility in multidisciplinary environments.

10. Communication
Graduates will communicate effectively on complex electrical engineering activities with the engineering community and society at large. This includes writing reports, making presentations, and giving and receiving clear instructions.

11. Project Management and Finance
Graduates will demonstrate an understanding of electrical engineering management principles and economic decision-making. They will be able to apply these principles to manage projects effectively as part of a team in multidisciplinary environments.

12. Lifelong Learning
Graduates will recognize the need for lifelong learning and possess the ability to engage in independent learning in the broad context of technological change.

The **Program Learning Outcomes (PLOs)** for a **Computer Engineering** program reflect the essential knowledge, skills, and abilities that students should acquire during their education. These outcomes align with accreditation standards and cover various aspects of both computer and network engineering.

The list of PLOs for a Computer Engineering program:

1. Engineering Knowledge
Graduates will demonstrate a strong foundation in mathematics, science, and engineering principles and apply this knowledge to solve complex computer engineering problems.

2. Problem Analysis
Graduates will be able to identify, formulate, and analyze complex computer engineering problems using appropriate theoretical and practical methods to reach substantiated conclusions.

3. Design/Development of Solutions
Graduates will be capable of designing and developing hardware and software solutions for complex engineering problems, ensuring that these designs meet specified needs while considering safety, performance, and sustainability.

4. Investigation
Graduates will be able to conduct investigations into complex problems, including designing experiments, analyzing data, and interpreting results to provide valid conclusions in computer and network engineering contexts.

5. Modern Tool Usage
Graduates will demonstrate proficiency in using modern engineering and IT tools, techniques, and resources for solving complex engineering problems, while also understanding their limitations.

6. The Engineer and Society
Graduates will assess the societal, safety, legal, and cultural issues relevant to computer and network engineering and apply this understanding to their engineering practice, ensuring the responsible creation and implementation of technology.

7. Environment and Sustainability
Graduates will understand the environmental impact of computer and network engineering solutions and demonstrate knowledge of sustainable practices in design and development to minimize negative effects.

8. Ethics
Graduates will apply ethical principles and commit to professional ethics, responsibilities, and norms of engineering practice, ensuring integrity in their work.

9. Individual and Team Work

Graduates will demonstrate the ability to work effectively both as individuals and as part of a team, often leading and managing multidisciplinary projects that involve engineers from different fields.

10. Communication
Graduates will communicate effectively with both technical and non-technical audiences, writing clear and concise reports, making impactful presentations, and engaging in effective dialogue on complex engineering activities.

11. Project Management and Finance
Graduates will have the ability to apply principles of engineering management, project management, and financial planning to lead and manage projects in a multidisciplinary environment.

12. Lifelong Learning
Graduates will recognize the need for, and have the ability to engage in, lifelong learning in order to keep up with advancements in technology and to remain effective professionals in the rapidly evolving field of computer engineering.

The career opportunities for Computer Engineering graduates:

- **Software Engineer**: Develop and maintain software applications.
- **Network Engineer**: Design and manage computer networks.
- **Embedded Systems Engineer**: Create hardware and software for embedded systems.
- **Cybersecurity Analyst**: Protect systems and networks from cyber threats.
- **Data Scientist/Engineer**: Analyze data and build models for data-driven solutions.
- **Cloud Solutions Architect**: Design and manage cloud-based solutions.
- **IT Project Manager**: Lead and manage IT projects.
- **AI/Machine Learning Engineer**: Develop AI and machine learning models.
- **Systems Engineer**: Manage IT infrastructure.
- **R&D Engineer**: Innovate and develop new technologies.
- **Entrepreneur/Startup Founder**: Launch a tech company or startup.
- **Telecommunications Engineer**: Design and manage telecommunication systems.
- **DevOps Engineer**: Optimize and automate software development processes.
- **Robotics Engineer**: Design and develop robots.
- **University Lecturer/Researcher**: Teach and conduct research in academia.

The career opportunities for **Electrical Engineering** graduates:

- **Power Systems Engineer**: Design and maintain electrical power systems.
- **Control Systems Engineer**: Develop control systems for automation and robotics.
- **Electronics Engineer**: Create electronic devices and systems.
- **Renewable Energy Engineer**: Focus on sustainable energy solutions.
- **Telecommunications Engineer**: Design communication networks.
- **Electrical Design Engineer**: Design electrical systems for buildings and machinery.
- **Automation and Instrumentation Engineer**: Develop automated systems for industries.
- **Maintenance Engineer**: Oversee the maintenance of electrical systems.
- **Electrical Project Manager**: Manage large electrical projects.
- **R&D Engineer**: Innovate new electrical technologies.
- **Electric Vehicle Engineer**: Develop systems for electric vehicles.
- **Smart Grid Engineer**: Work on smart electrical grids.
- **Robotics and Automation Engineer**: Develop robotic and automation systems.
- **Safety Engineer**: Ensure electrical system safety and compliance.
- **University Lecturer/Researcher**: Teach and conduct research in academia.

2. Organization and Contacts

2.1 Leadership of ESSAT

- Director : Dr. ZRELLI Abdallah ([Email])
- Vice-Director : Dr. MEZHOUDI Lotfi ([Email])
- Director des Stages : ouwais KABOW
- Secrétaire Général : hamza ABDEKADER

2.2 Departments and Programs

- Computer Science Department, Director: LAHOUI montassar
- Electrical and Automation Engineering Department, Director: houda BEN MANSSOUR

2. Specialties and Options:

First-year students are enrolled in their specialties through national or specific competitions; ESSAT offers 3 specialties. Third-year students are distributed among possible options within their specialty, taking into account their preferences.

3. Duration of Studies:

The training for each specialty includes approximately 2700 hours spread over three years of study. The first and second years each consist of two semesters and at least four weeks of professional internships. The third year includes one semester and at least sixteen weeks dedicated to a final year project.

4. Teaching Modules, Units, and Credits:

Teaching is organized into modules presented as lectures, directed studies, and practical work. Modules contributing to the acquisition of coherent learning outcomes are grouped into teaching units (UE). Each UE typically includes between 1 and 4 modules from the same semester. A semester includes between 3 and 6 UEs.

1 ECTS credit corresponds to 15 hours of work.

60 ECTS credits equal one year of study (900 hours of work).

Credits for each module are awarded based on the workload needed for engineering students to achieve the expected outcomes. The workload includes actual hours of attendance at all forms of pedagogical activities led by teachers, individual work, and evaluation tests. A semester totals 30 credits.

5. Les modules de langue

In addition to cultural and technical training objectives and communication, French and English lessons include preparation for students to achieve an independent user level (level B2) in both languages, required for obtaining the national engineering diploma from ESSAT.

6. Activités d'ouverture

Engineering students at ESSAT must justify at least two semesters of openness activities at the School or externally, such as cultural activities, sports, club participation, and learning an additional foreign language. Wednesday afternoons are generally reserved for these activities.

7. Attendance and Discipline:

Attendance at all teachings and activities planned in the curriculum is mandatory. More than 20% absence in any module per semester disqualifies the student from the main examination session of that module. In halls, gardens, and circulation areas, engineering students must behave civilly and observe good conduct rules. Any actions contrary to civic spirit are formally condemned and expose perpetrators to disciplinary sanctions.

8. Internships:

Training in each specialty is complemented by internships in the first and second year.

9 .Final Year Project (FYP)

In the third year, training includes a final year project related to the specialty pursued, conducted as professional engineering work supervised by at least one teacher. The PFE is defended before a jury. Only students who have passed the third-year exams and submitted their thesis on time are allowed to defend the FYP.

10. Modalité d'évaluation

Each module is evaluated through continuous assessment, a final exam, or a combination of both. Exams are written tests organized in two successive sessions: a main session and a makeup session. Absence from a final exam test results in a zero grade. Continuous assessment may include supervised assignments, written and/or oral tests, reports, and presentations on practical or synthesis work. The end-of-year project included in the study plans is a synthesis work module supervised by a teacher. This project is subject to a report and a presentation evaluated by a jury.

11. Calcul des moyennes

For each module, an average is calculated from the grades obtained in the various assessment tests (continuous assessment, final exam, or a combination of both, according to the current academic year's study plan). When the assessment mode for a module is mixed, that is, it includes both a final exam and continuous assessment, the weighting coefficients are: 60% for the final exam grade and 40% for the continuous assessment grade.

The calculation of the average for a teaching unit (UT) takes into account the weighting coefficients set in the study plans for the current academic year.

The credits allocated to a UE and those allocated to the modules that make it up, according to the study plan of the current year, are validated and capitalized as soon as an average of 10/20 or higher is obtained in the respective UE. Credits allocated to a module are validated and capitalized as soon as an average of 10/20 or higher is achieved in that module.

The average for a semester is obtained from the averages of the UEs for that semester, adjusted by their respective coefficients set in the study plans of the current academic year.

The annual overall average is the arithmetic mean of the averages of the first and second semesters.

12. Progression Rules

A student in the 1st or 2nd year is declared to have passed to the next year by the class council, during the main or makeup session, if they have achieved an average equal to or greater than 10/20 in each of the Teaching Units (UEs) defined in the study plan for the current year. In this case, the student validates and capitalizes the 60 credits for the current year.

The class council for the 3rd year declares a student to have passed and authorizes them to prepare their final year project if, during the main or makeup session, they have achieved an average equal to or greater than 10/20 in each of the UEs defined in the study plan for the first semester of the 3rd year. In this case, the student validates and capitalizes the 30 credits for this semester.

13. Resit Examinations

A student who is not declared passed in the main session is allowed to sit for the resit examination of the final exams for modules in which they scored below 10/20. However, if the overall average of the 1st or 2nd year, or the average of the first semester of the 3rd year in the main session is equal to or greater than 10/20, the modules eligible for resit are limited to those in which the student scored below 10/20 and belong to UEs where they scored below 10/20.

Modules assessed exclusively by continuous assessment are not eligible for resits. Consideration for resits also takes into account exceptions related to absenteeism.

At the end of the resit session, the average of each module, the average of the UEs, the semester averages, and the annual general average are calculated under the same conditions as the main session, taking into account the best grades obtained in the final exams during both the main and resit sessions.

14. Exceptional Admission

The scientific council of the School, after consulting the class council, may grant exceptional admission to the next year for students in the 1st or 2nd year who, after the resit session:

Have achieved an overall average equal to or greater than 10/20,

Have accumulated a number of credits less than 60 but equal to or greater than 54,

Have not been subject to disciplinary sanctions during the current year,

Have not been subject to sanctions related to absenteeism during the current year.

With an overall average equal to or greater than 10/20, exceptional admission leads to the validation by compensation of the UEs in which the student scored below 10/20. Thus, the student concerned by the exceptional admission validates the 60 credits of the current year (and only capitalizes the credits of the UEs in which they scored equal to or greater than 10/20 and also capitalizes the credits of any other module in which they scored equal to or greater than 10/20).

The scientific council of the School, after consulting the class council, may grant exceptional admission and authorize the preparation of a final year project (PFE) for students in the 3rd year who, after the resit session:

Have obtained an average for the first semester equal to or greater than 10/20,

Have capitalized a number of credits less than 30 but equal to or greater than 24,

Have not been subject to disciplinary sanctions during the current year,

Have not been subject to sanctions related to absenteeism during the current year.

With the first semester average being equal to or greater than 10/20, exceptional admission results in the validation by compensation of the UEs in which the student scored below 10/20. Thus, the student concerned by the exceptional admission validates the 30 credits of the first semester of the 3rd year.

At the end of the first semester and after the resit session, a 3rd year engineering student declared not admitted repeats their 3rd year.

15. Repeating a Year

In the event of repeating a year, the validated and capitalized UEs remain credited to the concerned student. The student may also retain, at their request at the start of the repeat year, the benefit of modules in which they scored equal to or greater than 10/20 and belonging to non-validated UEs.

The director of the School, upon the recommendation of the department head of the repeating student, may require the student to complete an internship or project at the School during their repeat year. This internship or project will be subject to a report and a graded defense. Progression to the next year will, in this case, be contingent upon the validation of the year and the internship or project.

16. Degree Conferment

The national engineering degree is awarded to 3rd year students who have validated the first semester of the 3rd year and have met the following conditions:

1/ Validation of all required internships,

2/ Justification, by internal assessment or external certification, of the level of an independent user in English (level B2),

3/ Justification of openness activities,

4/ Obtaining a grade equal to or greater than 10/20 in the final year project.

17. Extension of Study

3rd year students who have validated the first semester and have not met one or more of the (4) conditions listed above may benefit from an extension of their studies for up to 6 months.