PRACTICAL FIELD TRAINING HANDBOOK

Education & Student Affairs Sector

AIN SHAMS UNIVERSITY Faculty of Engineering

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Preface

Practical field training becomes a core issue in higher education. It involves a set of skills and experiences presented to the student within an institutional framework, or within an area of practice, helping student to acquire various areas of knowledge, field experiences, and technical skills, in addition to leverage personal features and behaviours. Hence, it will contribute to the student's professional growth, via crossing the gap between theoretical knowledge and practical application. Training is considered an opportunity for students to discover their capabilities, desires, and the needs of the market. Accordingly, practical field training becomes a mandatory requirement for graduation as assigned in 2018 bylaw.

Objectives of the Practical Field Training:

1. Enhancing the experiences of the faculty students by linking academia in the classroom with real practical situations in the work environment.
2. Supporting the opportunity for students to discover their professional interests in the field of their academic specialization.
3. Emphasizing the effectiveness of practical field training in preparing graduates for better practical future.
4. Providing the opportunity to acquire new skills of innovative thinking for problem solving and making practical decisions with confidence.

Therefore, this handbook is tailored to provide students, staff members, program coordinators and the faculty industrial advisory board with all information about the practical field training system applied in the faculty. The handbook shows details about training basic information and regulations assigned in 2018 bylaw, training process cycle and types. At the end of this handbook, an annex section is added to include QR codes for all needed templates as editable version, explainer video, and all program training specifications.

1. Basic information

The following table is the basic information of the practical field training mentioned in 2018 bylaw in "Part E Course Pool" (p.177):

<table>
<tr><td>ENG111</td><td colspan="3">Field Training</td><td>0 CH</td></tr>
<tr><td>Prerequisites</td><td colspan="4"></td></tr>
<tr><td colspan="5">Number of weekly Contact Hours</td></tr>
<tr><td colspan="2">Weekly Contact Hours</td><td colspan="3">Number of Weeks</td></tr>
<tr><td colspan="2">12</td><td colspan="3">12/3 l3vels</td></tr>
<tr><td>Required SWL</td><td>N/A</td><td>Equivalent ECTS</td><td colspan="2">N/A</td></tr>
<tr><td colspan="5">Course Content</td></tr>
<tr><td colspan="5">The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.</td></tr>
<tr><td colspan="5">Used in Program / Level</td></tr>
<tr><td colspan="3">Program Name or requirement</td><td colspan="2">Study Level</td></tr>
<tr><td colspan="3">Faculty Requirement</td><td colspan="2">1-4</td></tr>
<tr><td colspan="5">Assessment Criteria</td></tr>
<tr><td colspan="5">- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity.</td></tr>
</table>

2. Bylaw 2018 items for field training

The following are the regulations of the practical field training assigned in 2018 bylaw in (Article (1): Field Training):

- The student must perform Field Training for 12 weeks in an industrial or service facility related to the student's program and must be under the full supervision of the faculty. It is also possible to perform the training inside the faculty in a similar environment (limitations should be applied to ensure acquired values).

  Students can have till 2 weeks, a training that supports interpersonal and intrapersonal skills.
- The training follow-up will be handled by the academic advisor assigned by the program steering committee.
- Identifying a company official contact person.
- The student must submit a technical report to his academic advisor at the end of the training period.
- The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
- The training is divided into periods of 4 weeks at the end of the first, second, and third levels (can be in the fourth level as well – open during the semester)
- Training for a period 6 weeks is allowed for only one time during the study duration.
- The field training is evaluated on pass / fail basis and does not count in the cumulative GPA calculation.

- The student should pay the supervision fees for the field training at a rate of 2 Credit Hours, if applicable, each academic year during which he is performing Field Training.

S-CHEP Students who are interested to join a training opportunity conducted or organized by the Faculty of Engineering, will be required to pay the rate of 2-Credit Hours.

On the other hand, S-CHEP students still have the chance to provide individual training opportunities via private contacts, subject to be approved by their academic advisors and corresponding program coordinators.
The provided training opportunity by the students undergoes the same approval processes on the system.

3. Training process cycle

Training process cycle is completed via eight phases as follows (Figure 1):

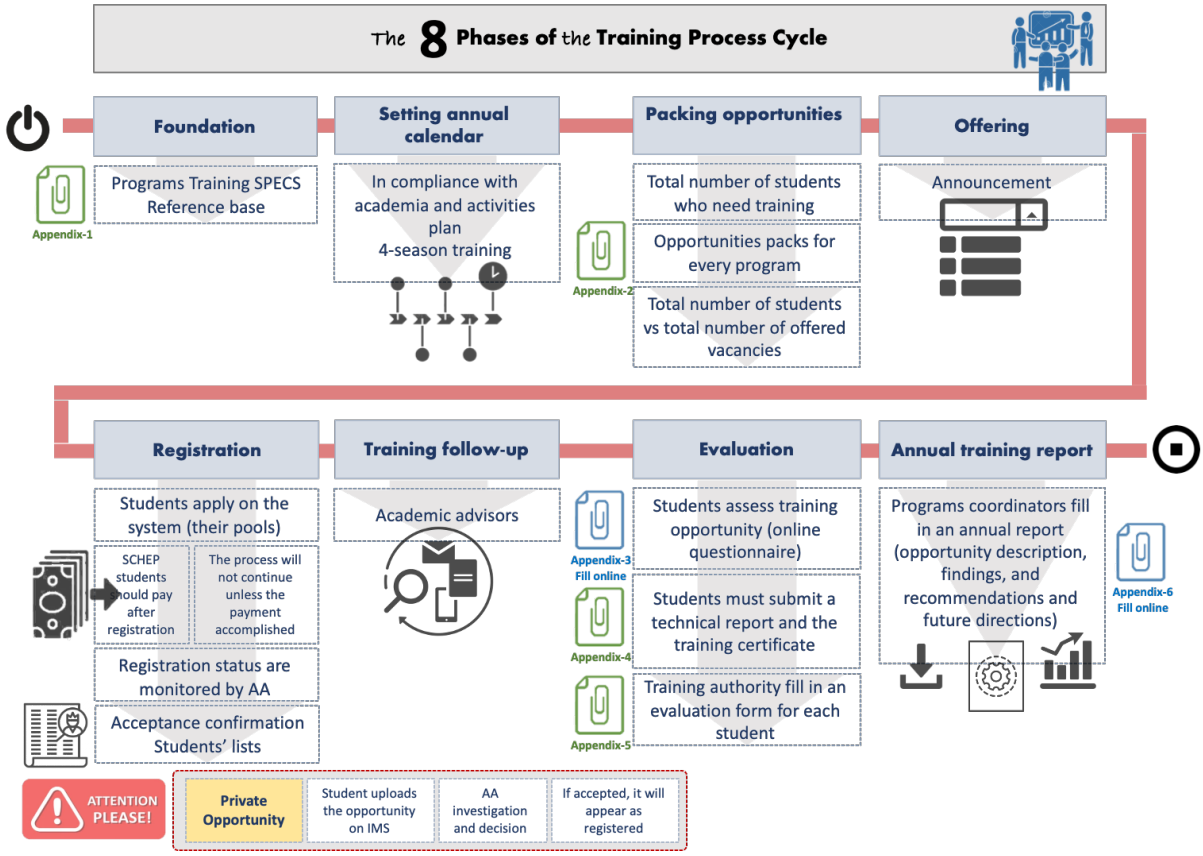

Figure 1. The phases of the annual training process cycle

Phase 1 | Preparing program training specifications – foundation phase (Appendix-1 | PFT-SPECS).

Phase 2 | Setting annual calendar

Training calendar should be prepared to include the four seasons of the academic year (midyear vacation, summer vacation, during Fall & Spring semesters) in compliance with both academia and students' activities.

Phase 3 | Packing opportunities

With coordination with programs' coordinators, packing opportunities can be achieved as follows:

- Determining the total number of students that will join the training season (classified by level).
- Packing opportunities and approval either supported by Education & Student Affairs Sector or the program coordinators, by filling in (Appendix-2 | Authority's opportunity description form). This form should be signed by both the authority (training provider)

and the programs' coordinators and attached to the opportunity flyer that is uploaded among the overall offering pack for each program.

- Estimating the total number of opportunities offered by the faculty (showing statistics with reference to the total number of students that should be trained (should be shown on the Information Management System (IMS)).

Phase 4 | Offering

After training offering package approval by programs' coordinators, offerings should be uploaded on IMS.

Phase 5 | Registration

- Students can apply on IMS by navigating through the offered opportunities.
- Students in specialized credit hours programs (S-CHEP) should pay after registration approval to continue the process.
- Registration status for every opportunity is monitored by academic advisors.
- Students can check their acceptance confirmation on the system due to the authority regulations (required students' number, interviews, prerequisites, . . .etc.). After acceptance, students' list for every opportunity are released and can be downloaded.

In training opportunities that need interview or any other special requirements, the process should start two weeks before any action taken in other regular opportunities (with no requirements/limitations) to ensure other vacancies for students who are not accepted.

- Students who have private opportunities should upload them on the portal exclusively for them (with all details required). Then, academic advisors should review all requests and then take decision. If the request is approved, it will be shown on the system as registered to those students only.

Such cases should also start and finish the whole process two weeks before any action taken in other regular opportunities to ensure other vacancies for students' requests that are not accepted.

Phase 6 | Training follow-up

Training follow-up process is monitored by academic advisors.

Phase 7 | Evaluation

In this phase, two assessments should be done as follows:

- Students are asked to fill in an *online* questionnaire regarding their training experience (Appendix-3 | A form that is completed by students who attended the practical training).
- Students must submit a technical report at the end of the training period (Appendix-4 | Student technical report), and the training certificate as well. The system will not allow submission click unless the student upload/fill in the three previous items (questionnaire, technical report, and certificate)
- Training authority is asked to fill-in an evaluation form regarding every student joined the opportunity (Appendix-5 | A form that is filled in by the industrial training supervisor and submitted to the program coordinator).

Phase 8 | Annual training report

By the end of the academic year, programs' coordinators should compete and submit a training report (Appendix-6 | PFT annual report). The report includes the following sections:

- Training opportunities with a brief description for each, in addition to some evidence (training photos, students' products, . . . etc.). These required data are available on IMS as principal basic data for each opportunity when offered, and it can be downloaded from the system. Other evidence can be collected from students' technical reports approved by academic advisors.
- Statistics-based findings (depending on students' evaluation done following (Appendix-3)).
- Recommendations and future directions.

4. Training types

Training opportunities can be classified into (Figure 2):

(1) Internal opportunities

This type can be defined by all opportunities that are provided through the faculty resources, whether by faculty labs, centres, units or individually by instructors.

(2) External opportunities

This type includes:

- Local opportunities (companies, firms, institutions, . . . etc.), whether reached by Education & Student Affairs Sector or by the programs' coordinators.
- International opportunities (workshops, summer/winter schools . . . etc.) whether hunted by Education & Student Affairs Sector or by the programs' coordinators.
- Private opportunity (offered by a student)
  This type should be studied and approved by academic advisors.

(3) Competitions

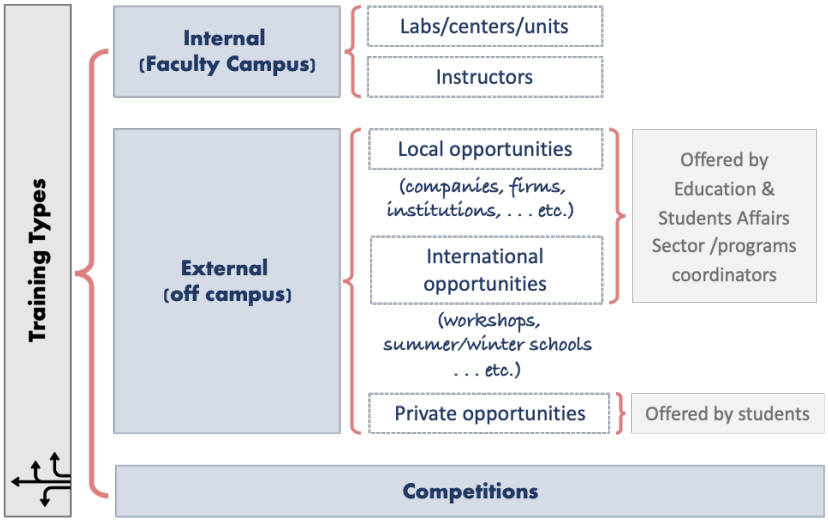

Figure 2. Training types

4.1. Internal opportunities

This type of training includes:

a) Faculty labs, centres, and units

In this case the training authority fills in the required template (Appendix-2) attached to the opportunity flyer that shows training aims, brief description, and LOs that match the program SPECS (the program that is targeted for the offering). Then, this proposal should be reviewed and authorized by the program coordinator with coordination with Education & Student Affairs Sector. This step should be done after the running summer training which is considered the last station of any yearly training calendar, to prepare the training plan for the year after starting from the Fall semester. Finally, after approval the proposal will be included in the new offering (new academic year).

b) Instructors

Instructors may have training opportunity ideas that go with specific academic track; thus, he/she can hand in his/her proposal using the same previous form (Appendix-2). Then, same steps should be followed like the previous type.

4.2. External opportunities

This type of training includes:

a) Local opportunities

Local opportunities (companies, firms, institutions, . . . etc.), should be accredited according to the following rules:

- Specialized in the offered opportunity assigned to specific discipline.
- Has previous successful experiences in student training (this point can be excluded under conditions with reference to the program coordinator's investigation)
- Have training proposal that are aligned with the program training SPECS.
- Accepts carrying out evaluation to trained students by the end of the training program.

These previous rules should be checked by programs' coordinators with the cooperation of Education & Student Affairs Sector. After approval, such entities can be added in the faculty pool of industrial stakeholders, memorandum of understanding can be agreed and signed (MoU) for many training cycles and other opportunities. Then, other steps are accomplished as previously mentioned.

b) International opportunities

Such opportunities are organized by programs' coordinators, International Relation Office, with reference to Education & Student Affairs Sector. This type should be also approved regarding the previous rules of the local opportunities. Then, other steps can be carried out as aforementioned.

c) Private opportunities

Private opportunity which are the opportunities offered by student can be applied (section 3. training process cycle).

4.3. Competitions

Competition is a distinguished type of training that ingrained in life and it is a part of evolution. Healthy competition contributes to the growth of students and prepares them for life which itself is competitive. This type could be offered locally whether by the faculty or other local entity. Also, it could be international. Thus, Faculty of Engineering, Ain Shams University encourages this type of experience as it provides a unique empowerment crossing all aspects of a person's development (mind, spirit and even body) as follows:[1]

- Paves a way to excellence as it inspires each one to put in extra efforts to know more, learn more and then to excel.
- Fosters motivation.
- Brings satisfaction in achievements.
- Boosts self-confidence.
- Toughens students as it takes them into real-life jobs and situations where they experience real stress and depression.
- Helps in handling disappointments where students can learn that they cannot always be number one and that defeat and disappointment are part of life (they learn that failure is just a trail that do not meet the aim, however, it is a learning opportunity).
- Fosters responsibility.
- Creates a generation of youth that will surely help in the creation of a better society with higher standards in all areas.
- Promotes collaboration as while a student may crow about his/her achievement, he/her must also realize that others too have contributed to this success.

[1] https://www.myeducomm.com/blog/why-is-competition-necessary-in-students-life/

To be included in the offering pool, competitions should be approved by programs' coordinators. Then, other steps can take place as previously mentioned. However, students are free to join what they want apart from training weeks calculation.

Program #1: Design and Production Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Design and Production Engineering		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

The student should complete a total of 12 weeks of Field Training sessions during his/her years of study within the program. The maximum duration of the session is 6 weeks. The fulfilment of these training sessions is mandatory to complete graduation requirements.
The overall objectives of the Field Training include:

- Exposing the student to the engineering work environment and practicing the engineering profession.
- Acquiring the technical and personal skills through working in a real/virtual environment.
- Implementing the engineering concepts in solving real-life problems.
- Familiarizing with contemporary technologies and using new tools and specialized software programs.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A Level Competencies: The Graduate must be able to:

A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

- B Level Competencies: The Graduate must be able to:

B4m. Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain mechanical equipment and systems.

- C Level Competencies: The Graduate must be able to:

C5a. Demonstrate additional abilities to model, analyse, and design mechanical components and systems using the most up-to-date tools of integrated systems.
C5b. Demonstrate additional abilities to analyse, design, integrate, operate, evaluate, control, automate, and implement methods and techniques to manage industrial systems.
C5c. Demonstrate additional abilities to select, prepare, analyse, treat, and test materials for specific applications.
C5d. Demonstrate additional abilities to select and link different manufacturing processes to certain design requirement to achieve desired levels of quality, product and process performance.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply engineering concepts to real-life problems.
2	Develop report writing skills.
3	Identify responsibilities of mechanical engineers in the field.
Psychomotor Domain	
4	Implement knowledge and professional experience to the design decisions.
5	Familiarize with contemporary technologies and using new tools and specialized software programs.
6	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline.
Affective Domain	
7	Cope with teamwork with students, engineers, technicians, workers and admin staff.
8	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
9	Be familiar with profession and market formal and informal language.

5. PFT LOs Mapping with Level of Competencies

ILOs	Level of Competences					
	A1	B4m	C5a	C5b	C5c	C5d
Cognitive Domain						
1	●	●	●	●	●	●
2	●	●	●	●		
3	●		●	●	●	●
Psychomotor Domaine						
4	●	●	●	●	●	●
5	●	●	●	●	●	●
6	●	●	●	●	●	●
Affective Domaine						
7		●				
8	●	●				
9		●	●	●	●	●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Reports (regarding projects' designs and any technical report)
- Presentation
- Portfolios including pictures, drawings, designs, notes, etc. showing the tasks/achievements of the students.

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9
Field work (site & office)	●	●	●	●	●	●	●	●	●
Reports	●	●	●	●	●	●	●	●	●
Presentation	●	●	●	●	●	●	●	●	●
Portfolios	●	●	●	●	●	●	●	●	●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and		●	●

	Content	Sophomore	Junior	Senior-1
	time management			
Field Work/Internships sites	Workshops and Service Centers	●	●	●
	Power Plants and Water Plants	●	●	
	Petroleum production and services	●	●	
	Factories	●	●	●
	National/Mega Projects	●	●	●
	Construction sites	●	●	●
Technical and Consultancy Offices	Planning and design		●	●
	R&D offices		●	●
	Tooling design			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Details about Level Objectives and Expectations:

Level	Sophomore	Junior	Senior-1
Level Objectives and Expectations	**"**Students at this level study courses related to the Mechanical Engineering requirements. Accordingly, the proposed objectives of the training include exposing the students to engineering systems implementing common concepts in mechanical engineering. These systems may include but not limited to the following**"**	Students at this level study courses related to the Design and Production Engineering requirements. Accordingly, the proposed objectives of the training include exposing the students to engineering environments such as factories, mega projects, construction sites, etc.	Students at this level study courses related to the Design and Production Engineering concentrations. Accordingly, the proposed objectives of the training include exposing the students to engineering environments such as design offices, R&D departments, Tooling design, new companies, etc.
Details	Thermal systems and power plants, etc.	Design and selection of machine elements as in Design Offices using computer-aided tools and contemporary software.	Design of production lines and linking different manufacturing processes to achieve desired levels of quality and process performance.
	Fluid systems such as water plants, and petroleum pipelines, etc.	Design of products as in Design Offices implementing proper standards, developing the necessary calculations, construction and working drawings, and selecting suitable materials.	Using contemporary machine tools such as CNC machines, machining centers, welding robots, assembly robots, PLC systems, etc.
	Material processing such as	Calculation and	Analysis and design of

Level	Sophomore	Junior	Senior-1
	steel plants, machining workshops, etc.	minimization of costs and conducting value engineering.	mechanical systems in design offices and developing technical reports including construction and working drawings as well as calculation sheets and simulations.
	Using graphical communication tools such as CAD and 3D modeling software and training in drafting offices.	Preparation of process and operation sheets, selection of processes and process parameters, and setting of production machines as in Production facilities and workshops.	Operation and analysis of production lines and assembly lines as in Automotive production facilities.
	Assembly and disassembly activities such as in overhaul workshops and service centers	Measure process parameters and inspect products.	Design of Metal Forming dies and metal forming technologies.
		Maintain and troubleshoot mechanical equipment as in Maintenance Departments, Production Workshops, and Construction sites.	Prepare business plans and feasibility studies for new startups

Program #2: Mechanical Power Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training			0 CH
Prerequisites				
Number of weekly Contact Hours				
Weekly Contact Hours	Number of Weeks			
12	12 / 3 levels			
Required SWL	N/A	Equivalent ECTS	Required SWL	
Course Content				
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.				
Used in Program / Level				
Program Name or requirement		Study Level		
Mechanical Power Engineering program (MEP)		1, 2 and 3		
Faculty Requirement		1-4		
Assessment Criteria				
- Students must submit a technical report at the end of the training period. - Students are requested to fill in an online questionnaire regarding their training experience. - Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity				

2. Course Aims

By the completing the practical field training, students will be able to:

- Get hands-on experience in practical field related to his/her study in the program.
- Acquire deep understanding of the fundamentals and theory in the training application field.
- Develop technical, interpersonal, and intrapersonal skills.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

A: The Engineering Graduate must be able to (A7, A8, and A10):

- **A7**. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams .
- **A8**. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools .
- **A10**. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.

B: The Mechanical Engineering graduate must be able to (B1m, B2m, B3m, and B4m):

- **B1m**. Model, analyse and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics, and Vibrations.
- **B2m**. Carry out designs of mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field .
- **B3m**. Select conventional mechanical equipment according to the required performance .
- **B4m**. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain mechanical equipment and systems.

C: The Mechanical Power Engineering Program graduate must be able to (C6 and C9):

- **C6**. Select the proper size of an engine or a pumping machine for the delivery purposes in industry, power generation and domestic use.
- **C9**. Use numerical methods to simulate the flow field and predict the thermal structures of mechanical power systems.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve Mechanical Power engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Propose decisions considering analysis of mass-energy-momentum transport, equipment selection, and design of mechanical power engineering applications.
4	Propose creative and innovative design solutions for the mechanical power engineering problems.
Psychomotor Domaine	

5	Experience and acquire skills in real-life applications
6	Create supplementary document and Project Identification Document (PID)
7	Use a wide range of analytical tools, techniques, equipment, and software packages to achieve design objective.
Affective Domaine	
8	Be acquainted with profession and market formal and informal language.
9	Exchange knowledge and skills with Mechanical engineering community and industry.
10	Collaborate effectively within multidisciplinary team.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A7	A8	A10	B1m	B2m	B3m	B4m	C6	C9
Cognitive Domain									
1				●	●	●	●		
2				●	●	●	●		
3				●	●	●	●	●	
4				●	●	●	●	●	
Psychomotor Domaine									
5			●						
6							●		
7				●	●	●	●	●	●
Affective Domaine									
8	●	●	●						
9	●	●							
10	●	●	●						

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity.

7. Teaching and Learning Methods

- Field work (site & office)
- Extracurricular courses
- Research
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)		●	●	●	●	●	●	●	●	●
Extracurricular courses	●	●	●	●						
Research	●	●	●	●			●			
Presentation	●	●			●					●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships	Energy related fields such as (but not limited to): Combustion – Air conditioning – Refrigeration – Turbomachinery – Power plants – Control - Hydraulics	●	●	●
Technical and Consultancy Offices	Planning and design		●	●
	Project Identification Document (PID)		●	●

Program #3: Automotive Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Automotive Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Training Aims

By the completion of the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify the responsibilities of automotive engineers.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of automotive engineering fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses the following several competences:

- A: The Engineering Graduate must be able to (A1):

  A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

- B: Mechanical Engineering Graduate must be able to (B4):

  B4. Adopt suitable national and international standards and codes; and integrate legal, economic, and financial aspects to design, build, operate, inspect, and maintain mechanical equipment and systems.

- C: Automotive Engineering Graduate must be able to (C1 – C6b):

  C1. Identify and discuss vehicles as complex systems from technical and social perspectives through a broad platform in automotive engineering
  C2. Analyse new technical challenges and create technical advancements in the automotive industry in four focus areas: powertrain, performance, autotronics and maintenance
  C3. Synthesize and evaluate automotive systems and products in terms of direct use and lifecycle analysis and take environmental and economic aspects into consideration
  C4. Utilize automotive-related IT and product development tools.
  C5. Demonstrate the skills needed to manage and contribute to team-based engineering activities and projects in a multi-discipline environment through application and practice.
  C6a. Blueprint an automotive service centre and/or workshop layout and analyse the vehicle production line.
  C6b. Identify the main components and design of commercial vehicles, earth moving equipment, race cars, motorcycles, and tricycles, and analyse their performance.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve automotive engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Identify the different faults and how to diagnose and fix them.
4	Use appropriate tools, techniques, and materials to repair and maintain.
Psychomotor Domaine	
5	Experience and acquire skills of automotive engineer profession via specific real-life situations.
6	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	

7	Teamworking with students, engineers, technicians, workers, and admin staff.
8	Work in stressful environment and within constraints.
9	Effectively manage tasks, time, and resources.
10	Exchange knowledge and skills with the automotive engineering community and industry.

5. PFT LOs Mapping with Level of Competencies

LOs	Competencies								
	A1	B4	C1	C2	C3	C4	C5	C6a	C6b
Cognitive Domain									
1	●	●	●	●	●	●			
2	●	●	●	●	●	●			
3	●	●	●	●	●	●			
4	●	●	●	●	●	●			
Psychomotor Domaine									
5							●	●	●
6							●	●	●
Affective Domaine									
7	●	●	●	●	●	●	●	●	●
8	●	●	●	●	●	●	●	●	●
9	●	●	●	●	●	●	●	●	●
10	●	●	●	●	●	●	●	●	●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)							●	●	●	●
Research	●	●	●	●	●	●	●	●	●	●
Project	●	●	●	●	●	●	●	●	●	●
Presentation							●	●	●	●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	

	Content	Sophomore	Junior	Senior-1
skills	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation, and conflict resolution	●	●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Assembly lines	●	●	●
	Service centres	●	●	●
	Workshops	●	●	●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #4: Mechatronics Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Mechatronics Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

The student should complete a total of 12 weeks of Field Training sessions during his/her years of study within the program. The maximum duration of the session is 6 weeks. The fulfilment of these training sessions is mandatory to complete graduation requirements.
The overall objectives of the Field Training include:

- Exposing the student to the engineering work environment and practicing the engineering profession.
- Acquiring the technical and personal skills through working in a real/virtual environment.
- Implementing the engineering concepts in solving real-life problems.
- Familiarizing with contemporary technologies and using new tools and specialized software programs.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A7, A8, and A10):
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
- B: The Mechanical Engineering Graduate must be able to (B1m and B2m):
    - **B1m**: Model, analyse and design physical systems applicable to the specific discipline by applying the concepts of: Thermodynamics, Heat Transfer, Fluid Mechanics, Solid Mechanics, Material Processing, Material Properties, Measurements, Instrumentation, Control Theory and Systems, Mechanical Design and Analysis, Dynamics and Vibrations.
    - **B2m:** Design mechanical systems and machine elements using appropriate materials using traditional means, computer-aided tools and software contemporary to the mechanical engineering field.
- C: The Mechatronics Engineering Graduate must be able to (C3, C5, C6 and C7):
    - **C3**: Identify and classify the performance of mechatronic systems and components through the use of analytical methods and Modelling techniques.
    - **C5:** Design a mechatronic system using systems approach to meet a given specification and requirements.
    - **C6:** Integrate a wide range of analytical tools, techniques, equipment, and software packages to design and develop mechatronic systems.
    - **C7:** Exercise creative approaches to the analysis and solution of problems in mechatronic engineering.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve mechatronics engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Identify responsibilities of mechatronics engineers in the field.
Psychomotor Domain	
4	Implement knowledge and professional experience to the system design decisions.
5	Familiarize with contemporary technologies and using new tools and specialized software programs to solve different problems within the domain of mechatronics.
6	Experience and acquire skills of designing or operating different mechatronics systems within different professional disciplines via specific real-life situations.
Affective Domain	
7	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
8	Collaborate effectively within multidisciplinary team.
9	Work in stressful environment and within constraints.
10	Effectively manage tasks, time, and resources.

5. PFT LOs Mapping with Level of Competencies

ILOs	Level of Competences								
	A7	A8	A10	B1m	B2m	C3	C5	C6	C7
Cognitive Domain									
1		●		●					
2				●	●	●		●	
3	●				●			●	●
Psychomotor Domaine									
4				●	●		●	●	
5		●		●	●	●			
6				●	●	●	●		●
Affective Domaine									
7	●		●						
8	●	●					●		
9	●	●					●	●	●
10	●		●				●	●	●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Reports (regarding projects' designs and any technical report)
- Presentation
- Project
- Special Sessions / Workshops

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)	●	●	●	●	●	●		●	●	●
Reports (regarding projects' designs and any technical report)	●	●		●			●	●		
Presentation							●	●		●
Project	●	●	●	●	●	●	●	●	●	●
Special Sessions/Workshop			●			●			●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Factories and different industrial entities for automation and control	●	●	●
	System Design and implementation within a specific context	●	●	●
	Diagnostics and Maintenance units to be conducted for functioning systems	●	●	●
	Quality Control applications		●	●
Technical and Training Centres	Embedded Systems projects		●	●
	System Automation and Control		●	●
	Autonomous Systems			●
	Intelligent Control Systems			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #5: Architectural Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Architectural Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

The aim of the practical training is to equip students with technical and professional (hard and soft skills) needed in the workplace, expose students to the job market. Moreover, it aims to enhance students learning capabilities, develop students' communication skills and develop students' craft skills.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- Architectural Engineering Program (A, B and C level)
    - **A-Level**
- A4: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
- A5: Practice research techniques and methods of investigation as an inherent part of learning.
- A7: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
- A8: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **B-Level:**
- B4a. Transform design concepts into buildings and integrate plans into overall planning within the constraints of: project financing, project management, cost control and methods of project delivery; while having adequate knowledge of industries, organizations, regulations and procedures involved.
- B5a. Prepare design project briefs and documents; and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.
    - **C-Level:**
- C1. Apply digital architecture software to produce, render, and present in design.
- C2. Demonstrate deep understanding of the advanced construction materials, methods and techniques.
- C6c. Demonstrate comprehensive ability to design urban projects that exist in thematic/heritage context with deep responsiveness to environmental issues and problems that face the society and built areas.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Develop research techniques and explore more about material application.
2	Recognize site language and report writing
3	Identify responsibilities of architecture, landscape and urban design in the field considering site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability
4	Recognize techniques of design, planning and engineering aspects of different architectural, urban design and urban planning projects
5	Apply knowledge and professional experience to the design decisions
Psychomotor Domaine	

6	Apply professional experience to the design, construction and working drawing classes.
7	Produce and create design project briefs and documents
8	Evaluate social, economic and spatial aspects of environment through building design and planning process.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Collaborate effectively with a team from different disciplines
11	Work in stressful environment and within constraints.
12	Communicate effectively.
13	Demonstrate efficient IT capabilities.
14	Manage tasks, time, and resources effectively.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A4	A5	A7	A8	B4a	B5a	C1	C2	C6c
Cognitive Domain									
1		●					●	●	
2			●		●				
3	●				●	●	●	●	●
4	●		●						●
5	●				●	●			●
Psychomotor Domaine									
6	●	●			●	●			
7					●	●			
8					●	●			●
Affective Domaine									
9	●	●			●	●			●
10			●	●					
11			●	●					
12			●	●					
13		●					●	●	
14			●	●					
15		●	●				●	●	

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)

- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●			●	●	●	●	●	●	●	●	●
Workshops							●	●	●	●	●	●	●	●	
Discussion groups											●	●	●	●	
Research	●		●					●					●		●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation											●	●	●	●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and soft skills training, upgrading personal and knowledge skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Site visit	●	●	●
	Practicing research techniques, developing student's skills to deal with specialized programs and software or interning in different projects	●	●	●
Field Work/Internships sites	Learn technical installations of different types of materials at different phases of the projects	●	●	●
	Implement different landscape elements (Softscape / Hardscape / water features / Site furniture / Lighting fixtures)		●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Design methods and project management			●
	Planning and design		●	●
	Execution drawings			●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #6: Electrical Power and Machines Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Electrical Power and Machines Engineering		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of electrical power and machines engineer in the field.
- Develop communication, report writing, and social skills.
- Develop technical skills based on theory and practice of electrical power and machines engineering.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses faculty competencies, electrical engineering competencies, and ECE program competences.

- Faculty Competencies

  A7: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
  A8: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
  A10: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

- Electrical Engineering Competencies

  B5: Identify needs, plan and manage resources, and gather information for solving a specific electrical/electronic problem and document and communicate this solution efficiently.

- Electrical Power and Machines Engineering Program Competencies

  C1. Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.
  C3. Design and perform experiments, as well as analyse and interpret experimental results related to electrical power and machines system.
  C4. Test and examine components, equipment and system of electrical power and machines.
  C5. Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer-controlled systems.
  C6. Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, and engineering practice integrally to accomplish assigned tasks and jobs.
2	Merge the engineering knowledge, understanding, and feedback to take decisions and to improve design of products/services.
3	Identify practical problems, propose creative and innovative solutions, and implement different problem-solving strategies.
Psychomotor Domain	
4	Experience and acquire skills of electrical power and machines engineering profession via specific real-life situations
5	Produce and create design project briefs and documents
6	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline.
Affective Domain	

7	Acquire and practice self, lifelong and other learning strategies.
8	Exchange knowledge and skills with electrical power and machines engineering community and industry.
9	Demonstrate efficient IT capabilities.
10	Acquire communication, entrepreneurial, and team-working skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A7	A8	A10	B5	C1	C3	C4	C5	C6
Cognitive Domain									
1						●	●	●	●
2			●		●	●			●
3			●	●	●	●			
Psychomotor Domain									
4				●				●	●
5		●		●				●	
6					●	●	●	●	●
Affective Domain									
7			●	●	●	●	●	●	●
8	●	●	●	●				●	
9				●					●
10	●	●	●	●					●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.
- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)	●	●	●	●	●	●	●	●	●	●
Workshops	●	●	●				●	●	●	●
Discussion groups							●	●	●	●
Research	●	●	●	●	●	●	●	●	●	●
Project	●	●	●	●	●	●	●	●	●	●
Presentation									●	●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Software and Computer Programming Skills	MATLAB Training	●	●	●
	Python/Arduino	●	●	●
	Data structures and algorithms in C/C++	●	●	●
	Internet of Things	●	●	●
	Embedded Systems	●	●	●
	Auto Cad Engineering Drawing	●	●	●
Field Training/ Technical Skills	Electrical Distribution basics		●	●
	Industry of cables		●	●
	Industry of Transformers		●	●
	Renewable energy systems design, simulation and control		●	●
	Classic control in industrial field			●
	Programmable logic controller (PLC) applications in industry			●
	SCADA systems applications in industry			●
	AC and DC Drives design and operation			●
	Protection of electrical stations			●
	Electrical power generation stations			●
	Industry of electrical protection equipment			●
	Industry of electrical panels assembly			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #7: Electronics and Communication Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Electronics and Communications Engineering Program (ECE)		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of electronics and communications engineer in the field.
- Develop communication, report writing, and social skills.
- Develop technical skills based on theory and practice of electronics and communications engineering.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses faculty competencies, electrical engineering competencies, and ECE program competences.

- Faculty Competencies
  - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
  - **A8:** Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
  - A9: Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
  - **A10:** Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
- Electrical Engineering Competencies
  - **B5:** Identify needs, plan and manage resources, and gather information for solving a specific electrical/electronic problem and document and communicate this solution efficiently.
- Electronics and Communications Program Competencies
  - **C2:** Demonstrate the ability to model and analyze components and systems in Electronics and Communication Engineering and identify the software tools required to optimize their performance.
  - **C4:** Demonstrate the knowledge about measurement equipment and demonstrate the ability to use them to characterize components and systems in Electronics and Communications Engineering.
  - **C5:** Demonstrate the knowledge about state of the art of components and systems in Electronics and Communications Engineering.
  - **C6:** Demonstrate additional abilities related to the field of the concentration within Electronics and Communications Engineering as listed below.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, and engineering practice integrally to accomplish assigned tasks and jobs.
2	Merge the engineering knowledge, understanding, and feedback to take decisions and to improve design of products/services.
3	Identify practical problems, propose creative and innovative solutions, and implement different problem-solving strategies.

Psychomotor Domain	
4	Experience and acquire skills of electronics and communications engineering profession via specific real-life situations
5	Produce and create design project briefs and documents
6	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline.
Affective Domain	
7	Acquire and practice self, lifelong and other learning strategies.
8	Exchange knowledge and skills with electronics and communications engineering community and industry.
9	Demonstrate efficient IT capabilities.
10	Acquire communication, entrepreneurial, and team-working skills.

5. PFT LOs Mapping with Level of Competencies

LOs						Competences			
	A7	A8	A9	A10	B5	C2	C4	C5	C6
Cognitive Domain									
1						●	●	●	●
2			●	●					●
3			●	●	●	●			
4					●			●	●
5		●			●			●	
6						●	●	●	●
7				●	●	●	●	●	●
8	●	●	●	●	●			●	
9					●	●			●
10	●	●	●	●	●				●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period attaching training authority's evaluation sheet.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to fill-in an evaluation form regarding every student who completes the training

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)	●	●	●	●	●	●	●	●	●	●
Workshops	●	●	●				●	●	●	●
Discussion groups							●	●	●	●
Research	●	●	●	●	●	●	●	●	●	●
Project	●	●	●	●	●	●	●	●	●	●
Presentation									●	●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Software and Computer Programming Skills	MATLAB Training	●	●	●
	Python/Arduino	●	●	●
	Data structures and algorithms in C/C++	●	●	●
	Internet of Things	●	●	●
	Embedded Systems/Robotics	●	●	●
	Autonomous vehicles	●	●	●
	Relevant software and programming skills	●	●	●
Field Training/ Technical Skills	Telecommunications/Wireless networks		●	●
	Optical fiber networks		●	●
	Optical Fiber cables		●	●
	PCB Design		●	●
	Telecommunications/Wireless networks			●
	Computer networks and system security			●
	Digital and Analog VLSI Design			●
	Digital signal processing applications			●
	Antenna/Radar/Lidar systems			●
	High Frequency and millimeter wave electronic circuits			●
	Relevant hardware and design CAD tools	●	●	●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #8: Computer and Systems Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Computer and Systems Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of computer and systems engineers in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of computer and systems engineering fundamentals as well as applications.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

According to the National Academic Reference Standards (NARS-2018), The Engineering Graduate must be able to (A-Level):

A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

In addition to the Competencies for all Engineering Programs the Basic Electrical Engineering graduate must be able to (B-Level):

B3e. Design and implement elements, modules, sub-systems or systems using technological and professional tools.
B5e. Identify needs, plan and manage resources, and gather information for solving a specific electrical/electronic problem and document and communicate this solution efficiently.

C: Computer and Systems Engineering Program (C1-C12):

C6. Define the blueprint for the product/service development plan with structured work streams, time scales and milestones ensuring optimization of activities, resources and cost.
C8. Carry out design, development, testing, debugging, operation and maintenance of digital systems/services such as computer systems, circuit boards, software systems, and mixed (embedded) systems.
C9. Establish an environment to build, test and release digital systems in a more rapid, frequent and reliable manner by emphasizing the collaboration and communication of developers and operations team members.
C11. Undertake research and supports new solutions to provide for concepts, ideas, product/service improvement.
C12. Demonstrate additional abilities related to the field of the discipline within Computer and Systems Engineering as listed below.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve computer and systems engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.

Cognitive Domain	
3	Use appropriate programming language to specify and implement different designs.
4	Propose creative and innovative design solutions considering balanced cost, benefits, safety/security, quality, and reliability for Computer Design, Computer Software, Computer Networks, and Artificial Intelligence adopting the most recent technologies and tools.
Psychomotor Domaine	
5	Experience and acquire skills of computer and systems profession via specific real-life situations
6	Use a wide range of techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
7	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
8	Be acquainted with profession and market formal and informal language.
9	Exchange knowledge and skills with computer and systems engineering community and industry.
10	Collaborate effectively within multidisciplinary team.
11	Work in stressful environment and within constraints.
12	Communicate effectively.
13	Effectively manage tasks, time, and resources.
14	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A3	**A4**	**B3e**	**B5e**	**C6**	**C8**	**C9**	**C11**	**C12**
Cognitive Domain									
1									●
2	●		●						●
3		●							
4				●	●	●	●		
Psychomotor Domaine									
5								●	
6									●
Affective Domaine									
7									●
8									●
9									●
10									●
11						●			
12				●					
13									●
14									●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are requested to fill in an online questionnaire regarding their training experience.

- Training authority is requested to release certificates and fill-in an evaluation form regarding every student joined the opportunity.

7. Teaching and Learning Methods

- Field work
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Field work	●	●	●	●	●				●	●	●	●	●	●
Workshops		●	●		●	●	●	●						
Discussion groups											●	●		●
Research	●	●	●				●							●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation										●				●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation, and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Software houses	●	●	●
	Industries that build or use computer-based systems, such as telecommunications, automotive, aerospace, etc.	●	●	●
	Computer companies		●	●
Technical and Consultancy Offices	Software solutions development and design		●	●
	Embedded systems and control		●	●
	Artificial Intelligence/Machine learning projects		●	●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #9: Structural Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Structure Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of infrastructure in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of infrastructure fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications. The Utilities and Infrastructure Program graduate must be able to:

- **A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
- **A6.** Plan, supervise and monitor implementation of engineering projects.
- **A7.** Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
- **A10.** Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.
- **C3.** Design special concrete structures and prestressed concrete structures.
- **C4.** Design special steel structures and strengthening of structures with essential repairs.
- **C5.** Design different types of structure foundations and different shoring systems.
- **C6.** Consider knowledge of construction techniques, insulation works and materials of special concrete types.
- **C7.** Demonstrate knowledge in the fields of management project resources, risk, safety and legal issues in construction.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve architectural engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate construction techniques and materials to specify and implement different designs.
4	Propose landscape architecture decisions considering site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability, systems for soil conservation, erosion control, and other strategies to promote site and community resilience and support ecosystem services.
5	Propose creative and innovative design/planning solutions for problems facing landscape architecture projects and evaluate alternatives for functional and aesthetic purposes, for public and private uses and use technology and to solve problems associated with architectural landscape designs.
Psychomotor Domaine	
6	Experience and acquire skills of landscape architecture profession via specific real-life situations
7	Produce and create design project briefs and documents

Cognitive Domain	
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Exchange knowledge and skills with architecture and landscape architecture engineering community and industry.
12	Collaborate effectively within multidisciplinary team.
13	Work in stressful environment and within constraints.
14	Effectively manage tasks, time, and resources.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

CLOs	CompetencesC5								
	A4	A7	A8	A10	C3	C4	C5	C6	C7
Cognitive Domain									
1	●				●				
2	●					●		●	
3	●					●			
4							●	●	
5				●	●				●
Psychomotor Domaine									
6		●			●			●	●
7	●		●	●					
8			●			●	●		
Affective Domaine									
9		●		●					
10		●					●		
11								●	●
12		●							●
13								●	●
14						●		●	
15			●					●	

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity.

7. Teaching and Learning Methods

- Field work (site & office).
- Workshops.
- Discussion groups.
- Research (regarding projects' designs and any technical report).

- Project.
- Presentation.

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation, and conflict resolution		●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Construction Sites	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #10: Water Engineering and Hydraulic Structures Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12/3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Water Engineering and Hydraulic Structures		Study Level: 1, 2,3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity.			

2. Course Aims

The aim of this course is to equip students technical and professional hard and soft skills needed in the workplace, expose students to the job market in Egypt, enhance students learning capabilities, develop student's communication skills and develop students' craft skills.
After completion of sophomore level, the student should complete three first-hand field training sessions, for not less than 12 weeks duration in total, to be performed during summer semesters. The fulfilment of these training sessions is mandatory to complete graduation requirements.

3. Program Competencies Served by PFT

A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.

A6. Plan, supervise and monitor implementation of engineering projects.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.
B3c.Plan and manage construction processes; address construction defects, instability, and quality issues; and maintain safety measures in construction and materials.
B4c. Deal with biddings, contracts and financial issues including project insurance and guarantees; and assess environmental impacts of civil engineering projects.
C1. Identify principles in the fields of fluid mechanics, hydraulics, irrigation and drainage, hydrology, water resources, and apply principles of GIS in water engineering.

C2. Design and analyze crossing structures, control structures, navigation structures, harbor structures, storage work and produce civil drawings.

C3. Consider environmental issues in hydraulics, coastal engineering, ground water and surface water hydrology, river engineering, water quality, climate change, conduct field and laboratory measurements, and assess environmental impact of water engineering projects.

C4. Plan and design irrigation and drainage systems, hydraulic networks, sustainable drainage systems and pump stations.

C5. Demonstrate knowledge in the fields of water concrete structures, foundation of water structures, sanitary works, roadways and transportation systems and their codes of practice and standards.

C6. Use some computer programs and information technology in the field of water engineering and hydraulic structures.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve civil engineering problems related to projects in water field.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate construction techniques and materials to specify and implement different designs.
4	Propose construction engineering decisions considering site analysis characteristics of

Cognitive Domain	
	the sites, balanced costs, benefits, safety, quality, reliability, systems for soil conservation, erosion control, and other strategies to promote site and community resilience and support ecosystem services.
5	Propose creative and innovative design/planning solutions for problems facing structural design or construction of projects.
Psychomotor Domaine	
6	Experience and acquire skills of water engineers' profession via specific real-life situations
7	Produce and create design project briefs and documents
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Collaborate effectively within multidisciplinary team.
12	Work in stressful environment and within constraints.
13	Communicate effectively.
14	Demonstrate efficient IT capabilities.
15	Effectively manage tasks, time, and resources.
16	Acquire entrepreneurial skills.

5. LOs Mapping with Level of Competencies

LOs	Competences													
	A4	A6	A7	A8	A9	A10	Bc3	Bc4	C1	C2	C3	C4	C5	C6
1									●					
2	●						●			●				
3										●	●			
4							●				●		●	
5					●					●		●		
6									●					
7								●						
8														●
9						●								
10				●					●	●	●	●	●	●
11				●										
12					●									
13			●											
14									●					●
15					●									
16					●									

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period attaching training authority's evaluation sheet.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Field work (site & office)	●	●	●	●	●				●	●	●	●	●			
Workshops		●	●		●	●	●	●								
Discussion groups											●		●			
Research	●	●	●				●						●	●		
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation										●			●		●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution		●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Construction Sites	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #11: Utilities and Infrastructure Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12/3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Utilities and Infrastructure Program		Study Level: 1, 2,3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity.			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of infrastructure in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of infrastructure fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications. The Utilities and Infrastructure Program graduate must be able to:

- **A6.** Plan, supervise and monitor implementation of engineering projects.
- **A7.** Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
- **B4c.** Deal with biddings, contracts and financial issues including project insurance and guarantees; and assess environmental impacts of civil engineering projects.
- **C2.** Plan and design of highways, railways, transport systems, traffic management systems, water and wastewater networks and treatment facilities and produce civil drawings.
- **C3.** Consider environmental issues in transportation planning and traffic engineering, water and wastewater systems, solid waste management, conduct field and laboratory measurements, and assess environmental impact of public works engineering projects.
- **C4.** Use wide-range of analytical tools, techniques, equipment, and software packages in the field of surveying, remote sensing, transportation engineering and water and sanitation facilities.
- **C5.** Demonstrate knowledge and understanding and carry out maintenance of all elements for different types of roads, airports, pavements and traffic systems.
- **C6**. Demonstrate knowledge, understanding and application of transportation planning and traffic engineering models and systems at various planning scales.
- **C7.** Demonstrate knowledge, understanding, and utilization of plane and topographic surveying techniques, processes and equipment, photogrammetry, and the Global Positioning System (GPS) in engineering projects.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Develop research techniques and explore more about material application.
2	Recognize site language and report writing
3	Identify responsibilities of the infrastructure engineer.
Psychomotor Domaine	
4	Produce and create design project briefs and documents.
5	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
6	Collaborate effectively within multidisciplinary team.
7	Work in stressful environment and within constraints.
8	Effectively manage tasks, time, and resources.
9	Communicate effectively.
10	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competencies								
	A6	A7	B4	C2	C3	C4	C5	C6	C7
1					●				
2	●	●	●	●		●	●		●
3	●	●	●	●	●	●	●	●	●
4	●		●	●				●	
5	●			●	●	●			●
6	●	●		●		●	●	●	●
7		●		●			●	●	●
8		●		●		●	●		●
9	●	●	●						
10	●	●	●	●	●			●	●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity.

7. Teaching and Learning Methods

- Field work (site & office).
- Workshops.
- Discussion groups.
- Research (regarding projects' designs and any technical report).
- Project.
- Presentation.

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Field work (site & office)		●	●	●	●	●	●	●	●	●
Workshops	●					●			●	●
Discussion groups			●			●			●	●
Research	●							●		
Project		●	●	●	●	●	●	●	●	●
Presentation	●		●					●	●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●

	Content	Sophomore	Junior	Senior-1
	Teamwork, flexibility, negotiation, and conflict resolution		●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Construction Sites	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #12: Materials Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training			0 CH
Prerequisites				
Number of weekly Contact Hours				
Weekly Contact Hours		Number of Weeks		
12		12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A	
Course Content				
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.				
Used in Program / Level				
Program Name or requirement		Study Level		
Materials Engineering Program (MATL)		1, 2 and 3		
Faculty Requirement		1-4		
Assessment Criteria				
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity				

2. Course Aims

By the completing the practical field training, students will be able to:

- Learn the principles of teamwork.
- Develop technical, interpersonal, and intrapersonal skills.
- Cope with the lived experience of working environment.
- Identify the responsibilities of materials engineers in the various fields of work.
- Deepen the understanding of materials engineering in terms of acquiring the skill of selecting materials to be suitable for work conditions.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A7, A8, and A10):
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

- D: Materials Engineering Program (D1, D2, D3, D4, D5 and D6):
    - **D1.** Apply general math, science and engineering skills to the solution of engineering problems related to materials
    - **D2.** Analyse the relationship between structure, properties, processing and design of materials and their final impact on the product design and performance
    - **D3.** Understand systems applicable to the material engineering discipline by applying the concepts of: Thermodynamics, Fluid Mechanics, heat and mass transfer and engineering chemistry, solid Mechanics, material processing, material Properties, measurements, and mechanical Design
    - **D4.** Develop, prepare and characterize new materials by applying concepts of homogeneity and polymorphism, phase transformation, crystalline structures and reaction kinetics
    - **D5.** Select, Model, analyse, design, treat and test material systems of monolithic composite and hybrid materials in engineering systems such as mechanical, biomedical, electronic, communication and advanced building systems
    - **D6.** Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain industrial equipment and systems

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Select the appropriate materials and machines for a specific application
2	Demonstrate different methods of preparations and reactions mechanisms
3	Apply different project management techniques
4	Identify various crystalline systems, their defects and factors affecting nucleation and grain growth
5	Categorize the different types of analytical techniques, water treatments and UV spectrophotometry – Gas Chromatography

Psychomotor Domaine	
6	Create 2-D and 3-D solid models for the given exercises using the 3D – CAD drawing package (SolidWorks) in the computer lab or in a professional drawing office
7	Compose a comprehensive report on a real-life project that reflects the different graphical and analytical project management techniques.
8	Implement manufacturing process.
Affective Domaine	
9	Revise judgments and change behavior considering new evidence.
10	Demonstrate mechanical and physical properties of solid materials with the microstructure
11	Discuss the industrial problems in the field of petrochemicals
12	Apply critical thinking to engineering problems to prepare effective technical reports
13	Demonstrate the product properties made by given manufacturing process
14	Develop creative thinking and problem-solving skills
15	Develop phase diagram from the basic data of the alloys and design processing cycle considering physiochemical properties of steel slags.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A7	A8	A10	D1	D2	D3	D4	D5	D6
Cognitive Domain									
1			●			●			
2			●	●					●
3	●	●					●	●	
4			●	●	●				
5		●	●		●				
6			●		●			●	
Psychomotor Domaine									
7		●							
8		●			●			●	
9		●	●						●
10		●	●		●			●	
11		●			●				
Affective Domaine									
12			●			●	●		
13		●	●						
14			●						
15	●	●	●				●		
16				●	●				
17	●		●				●		
18		●	●						
19		●			●	●	●		
20	●	●				●	●		

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	Field work	Workshops	Discussion groups	Research	Project	Presentation
1			●	●		
2			●	●		
3	●	●			●	
4			●	●		●
5			●	●		
6	●	●			●	●
7	●	●			●	●
8	●	●	●	●	●	●
9				●		
10			●	●		●
11			●	●		●
12			●		●	
13	●	●				
14				●		
15				●		

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●

	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Select the appropriate materials and machines for a specific application	●	●	●
	Select the different types of analytical techniques	●	●	●
	Identify various crystalline systems, composites, polymers and metals	●	●	●
Technical and Consultancy Offices	Machine design		●	●
	Material design		●	●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #13: Manufacturing Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Manufacturing Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Exposing the student to the engineering work environment and practicing the engineering profession.
- Acquiring the technical and personal skills through working in a real/virtual environment.
- Implementing the engineering concepts in solving real-life problems.
- Familiarizing with contemporary technologies and using new tools and specialized software programs.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7 and A8):
    - **A4**: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
-
- D: Manufacturing Engineering Program (D3-D8):
    - D3. Design mechanical systems and machine elements using appropriate materials both traditional means and computer-aided tools and software contemporary to the mechanical engineering field.
    - D4. Understand, select and plan various materials processing technologies to produce different types of products.
    - D5. Design products, process and the equipment, tooling and environment necessary for their manufacture to meet desired needs within realistic constraints.
    - D6. Apply knowledge, problem solving techniques, and hands-on skills in assessment of design, operation and continuous improvement of manufacturing systems, including automated manufacturing processes, process controls, manufacturing operations management, and systems integration.
    - D7. Understanding of the creation of competitive advantage through manufacturing planning, strategy, and control.
    - D8. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain industrial equipment and systems.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve manufacturing engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Select appropriate manufacturing techniques and materials of various product and systems designs.
4	Propose manufacturing engineering decisions related to products manufacturing and

Cognitive Domain	
	quality.
5	Propose creative and innovative design/planning solutions for problems facing manufacturing engineers in industrial facilities improving factories productivity and products' quality.
Psychomotor Domaine	
6	Experience and acquire skills of manufacturing engineering profession via specific real-life situations
7	Produce products and factory designs and process plans.
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the manufacturing engineering.
Affective Domaine	
9	Be acquainted with profession and market formal and informal language.
10	Collaborate effectively within multidisciplinary team.
11	Work in stressful environment and within constraints.
12	Effectively manage tasks, time, and resources.
13	Display appreciation of products' manufacturing, safety in industrial facilities, products' quality and manufacturing costs.
14	Practice the norms, codes, Good Manufacturing practices and standard at industrial facilities.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A4	A7	A8	D3	D4	D5	D6	D7	D8
Cognitive Domain									
1					●		●		
2	●			●		●			
3	●						●		
4									
5						●	●		●
Psychomotor Domaine									
6	●							●	
7					●				
8				●			●		
Affective Domaine									
9				●			●		
10									
11									
12	●	●							
13		●	●		●			●	
14		●	●						●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●
Workshops		●	●		●	●	●	●						
Discussion groups											●	●		●
Research	●	●	●				●							●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation										●				●

9. Training Strategy

Manufacturing Engineering Program adopted different policies for students' training according to their educational level, these policies are as follows:

	Content	Sophomore	Junior	Senior 1
Training courses which will be designed and delivered in faculty	Drafting and CAD Software	●		
	Design and manufacturing projects	●		
	CNC Maintenance (Luban Workshop)		●	●
	Supply Chain Management			●
	Industry 4.0 and Cloud Manufacturing			●
Industrial trainings and internship	Engineering industries	●	●	
	Assembly Industries (Home appliances and automotive)	●	●	●
	Food and FMCGs Industries			●
	Chemical and building materials industries		●	●
Practice-based workshops and internships outside Egypt			●	●

Program #14: Mechatronics Engineering and Automation Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Mechatronics Engineering and Automation		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of Mechanical and Mechatronics engineering in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of Mechanical/ Mechatronics engineering fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A7, A8, and A10):
  - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
  - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
  - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies
- D: Mechatronics and automation engineering Program (D1, D2, D3, D4, and D5):
  - **D1**: Integrate relationship of Mechanical, electrical, electronics, and control into design process of different Mechatronics systems.
  - **D2**: Discuss, search, and formulate informed opinions appropriate at specific context and circumstances affecting Mechatronics profession and practice.
  - **D3**: Judge Mechatronics engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
  - **D4**: Propose creative and innovative solution for problems facing Mechanical and embedded systems projects.
  - **D5**: Professionally merge the Mechanical engineering knowledge with electrical and electronics engineering, understanding, and feedback to improve design of mechatronics system, products and/or services.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve robotics engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate concurrent approach to specify and implement different mechatronics system designs.
4	Propose creative and innovative design/planning solutions for problems facing different projects and evaluate alternatives for functional and aesthetic purposes, for public and private uses and use technology and to solve problems associated with mechatronics system designs.
Psychomotor Domaine	
5	Experience and acquire skills of mechatronics engineering profession via specific real-life situations
6	Produce and create mechatronics systems project briefs and documents
7	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.

Affective Domaine	
8	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
9	Be acquainted with profession and market formal and informal language.
10	Exchange knowledge and skills with mechatronics engineering community and industry.
11	Collaborate effectively within multidisciplinary team.
12	Work in stressful environment and within constraints.
13	Communicate effectively.
14	Effectively manage tasks, time, and resources.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences							
	A7	A8	A10	D1	D2	D3	D4	D5
	Cognitive Domain							
1	●				●			
2		●				●		
3	●		●	●	●			●
4		●					●	
	Psychomotor Domaine							
5	●				●			
6		●		●				●
7			●		●			
	Affective Domaine							
8	●					●		
9			●					●
10	●	●			●	●		
11		●		●	●			
12		●		●			●	
13			●			●		
14		●	●		●		●	●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	
Workshops		●	●		●	●	●	●				●	●	
Discussion groups											●	●		
Research	●	●	●				●							●
Project	●			●	●	●			●	●	●	●	●	●
Presentation				●	●					●				●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Automation Process	●	●	●
	Management control	●	●	●
	Embedded systems		●	●
Technical and Consultancy Offices	Instrumentation and control		●	●
	Design drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #15: Landscape Architecture Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Landscape Architecture Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of landscape architects in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of Landscape Architecture/Architecture fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7, A8, and A10):
    - **A4**: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
- D: Landscape Architecture Program (D1, D2, D4, D6, and D9):
    - **D1**: Create architectural, urban and landscape designs that satisfy both aesthetic and technical requirements, using adequate knowledge of history and theory, related fine arts, local culture and heritage, technologies, and human sciences.
    - **D2**: Integrate relationship of structure, energy systems, landscape materials, and construction elements into design process in different scales.
    - **D4**: Judge landscape architecture decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
    - **D6**: Professionally merge the engineering knowledge and landscape architecture, understanding, and feedback to improve design, products and/or services.
    - **D9**: Prepare design project briefs and documents; and understand the context of the landscape architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve architectural engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate construction techniques and materials to specify and implement different designs.
4	Propose landscape architecture decisions considering site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability, systems for soil conservation, erosion control, and other strategies to promote site and community resilience and

Cognitive Domain	
	support ecosystem services.
5	Propose creative and innovative design/planning solutions for problems facing landscape architecture projects and evaluate alternatives for functional and aesthetic purposes, for public and private uses and use technology and to solve problems associated with architectural landscape designs.
Psychomotor Domaine	
6	Experience and acquire skills of landscape architecture profession via specific real-life situations
7	Produce and create design project briefs and documents
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Exchange knowledge and skills with architecture and landscape architecture engineering community and industry.
12	Collaborate effectively within multidisciplinary team.
13	Work in stressful environment and within constraints.
14	Effectively manage tasks, time, and resources.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A4	A7	A8	A10	D1	D2	D4	D6	D9
Cognitive Domain									
1	●				●				
2	●					●		●	
3	●					●			
4							●	●	
5				●	●				●
Psychomotor Domaine									
6		●			●			●	●
7	●		●	●					
8			●			●	●		
Affective Domaine									
9		●		●					
10		●					●		
11								●	●
12		●							●
13								●	●
14						●		●	
15			●					●	

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.

- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LOs Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Construction Sites (in both landscape architecture and architecture)	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #16: Environmental Architecture and Urbanism Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Environmental Architecture and Urbanism Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of landscape architects in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of Architectural engineering/Environmental Design fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7, A8, and A10):
    - **A4**: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
- D: Environmental Architecture and Urbanism Program (D1, D4, D6, D8 and D10):
    - **D1**. Gain the required knowledge of architecture and urban planning principles, history and theories, technologies, economics, human sciences and local culture and heritage to create aesthetically pleasing and technically sound architectural and urban designs.
    - **D4.** Use their knowledge of building environmental systems and management together with their understanding of the underlying concepts and theories, to solve problems and creatively design sustainable building schemes or urban contexts; and to demonstrate awareness and integration of information and processes in project work.
    - **D6.** Coordinate and monitor the production of information and data from a variety of sources, including drawings, specifications, codes of practice, related to principals of environmental architecture and urbanism.
    - **D8**. Judge engineering decisions considering balanced costs, benefits, risks, safety, quality, reliability, and environmental impact, while having adequate knowledge of industries, organizations, regulations and procedures involved. D4
    - **D10.** Exchange knowledge and skills with engineering sectors and industrial sectors working in the field of environmental control.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve architectural engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate construction techniques and materials to specify and implement different designs.

Cognitive Domain	
4	Propose environmental architecture decisions considering site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability, systems for soil conservation, erosion control, and other strategies to promote site and community resilience and support ecosystem services.
5	Propose creative and innovative design/planning solutions for problems facing architecture projects and evaluate alternatives for functional and aesthetic purposes, for public and private uses and use technology and to solve problems associated with architectural and Urban designs.
Psychomotor Domain	
6	Experience and acquire skills of Architecture profession via specific real-life situations
7	Produce and create design project briefs and documents
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domain	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Exchange knowledge and skills with architecture and urban design engineering community and industry.
12	Collaborate effectively within multidisciplinary team.
13	Work in stressful environment and within constraints.
14	Effectively manage tasks, time, and resources.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	A4	A7	A8	A10	D1	D4	D6	D8	D10
Cognitive Domain									
1	●				●				
2	●					●	●		
3	●					●			
4							●	●	
5				●	●				●
Psychomotor Domain									
6		●			●		●		●
7	●		●	●					
8			●			●		●	
Affective Domain									
9		●		●					
10		●						●	
11							●		●
12		●							●
13							●		●
14						●	●		
15			●				●		

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.

- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LOs Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships sites	Construction Sites (in both landscape architecture and architecture)	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #17: Housing Architecture and Urban Development Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Housing Architecture and Urban Development Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of architects and urban developers in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Relate theories with practice and field work.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7, A8, and A10):
    - **A4**: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A8**: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

- D: Housing Architecture and Urban Development Program (D5, D6, D9, D12, D15):

  D5. Understand and oversee the technical design and construction aspects of houses, infrastructure, and Solve conflicts between the engineering systems that serve residential context and its urban values (Technical Installations, Urban Infrastructure, Architecture Installations)
  D6. Apply digital technologies and software as design aiding tools to generate and analyse spatial data & to produce integrated architecture documents and Land Mapping.
  D9. Interpret and apply principles best practice of all aspects of property urban, development, land management and real estate valuation with due regard for the legislative framework and relevant property legislation while having adequate knowledge of industries, organizations, regulations and procedures involved.
  D12.Prepare design project briefs and documents; and understand the context of the architect in the construction industry, including the architect's role in the processes of bidding, procurement of architectural services and building production
  D15.Demonstrate comprehensive ability to Manage and maintain systems, processes, programs of housing and land management projects and Informal Settlements Regularization at organization and operational levels

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of sciences, information technology, design, business context and engineering practice integrally to solve architectural engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.

Cognitive Domain	
3	Use appropriate construction techniques and materials to specify and implement different designs.
4	Propose urban and architecture projects decisions considering housing markets, site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability, systems for soil conservation, erosion control, and other strategies to promote site and community resilience and support ecosystem services.
5	Propose creative and innovative design/planning solutions for problems facing urban and architecture projects implementation and management and evaluate alternatives for functional and aesthetic purposes, for public and private uses and use technology
Psychomotor Domaine	
6	Experience and acquire skills of architecture and urban profession via specific real-life situations
7	Produce and create design project briefs and documents specially for mega projects
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Exchange knowledge and skills with architecture and landscape architecture engineering community and industry.
12	Collaborate effectively within multidisciplinary team.
13	Work in stressful environment and within constraints.
14	Effectively manage tasks, time, and resources.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A4	A7	A8	A10	D5	D6	D9	D12	D15
Cognitive Domain									
1		●				●			
2						●	●		
3	●	●							
4							●		
5				●	●				
Psychomotor Domaine									
6									●
7					●			●	●
8						●		●	
Affective Domaine									
9			●						●
10									●
11		●				●			
12	●	●							
13				●			●		
14			●			●			
15								●	

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●		●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation, and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Construction Sites (in both small scale buildings and mega projects for housing development for architecture and architecture)	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #18: Communication Systems Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Communication Systems Engineering Program (COMM)		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Develop technical and communication skills.
- Figure out how to utilize theoretical background in solving real-life problems.
- Develop technical skills in Communication Systems Engineering.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7, A8, and A10):

A8: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A10: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

- D: Communication Systems Engineering Program (D1-D7):

D1. Estimate and measure the performance of communication and electronic systems under specific input excitation and evaluate its suitability for a specific application.
D2. Identify needs, plan and manage resources, and gather information for solving a specific communication problem and efficiently document this solution.
D3. Have the technological abilities to design and implement elements, modules, sub-systems or systems.
D4. Be familiar with and utilize professional tools for communication system engineering.
D5. Design, model and analyze electronic, microwave, optical, and communication systems or components for a specific application and identify the tools required to optimize this design.
D6. Classify and evaluate the applications and market segments to create a specific product including the estimation of the required resources.
D7. Demonstrate additional abilities related to the field of the concentration as listed below:

Concentration	Graduate attributes
Circuits and Systems	**D7a.** Demonstrate additional abilities to design analog and/or digital circuits of any electronic system.
Physical and Wave Electronics	**D7b.** Demonstrate additional abilities to analyze, design any microwave or optical communication system.
Signals and Communication Systems	**D7c.** Demonstrate additional abilities to work on state of the art research problems in signal processing, image and multimedia processing. **D7d.** Demonstrate additional abilities to manage and design any communication system.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve electronics and communication engineering problems.
2	Work on professional tools in communication system engineering projects.

Psychomotor Domaine	
3	Experience and acquire skills of electronics and communication via specific real-life problems.
4	Use a wide range of analytical tools, techniques, equipment, and software packages to develop required computer programs to solve real problems.
5	Design and implement elements or modules for specific communication system.
Affective Domaine	
6	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
7	Communicate effectively
8	Effectively manage tasks, time, and resources.
9	Work in stressful environment and within constraints.
10	Exchange knowledge and skills with industry.

5. PFT LOs Mapping with Level of Competencies

LOs			Competences						
	A8	A10	D1	D2	D3	D4	D5	D6	D7
Cognitive Domain									
1				●			●		●
2						●			
Psychomotor Domain									
3					●			●	●
4						●		●	●
5				●	●		●		●
Affective Domain									
6		●	●				●		●
7	●			●				●	
8		●		●				●	
9				●			●		
10	●						●		●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Internships with site visits
- Project
- Discussion groups

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10
Internships with site visits	●	●	●		●	●	●			●
Projects		●	●	●	●	●		●	●	
Discussion groups				●	●		●	●	●	●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership		●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management		●	●
Field Work/Internships	Mobile Communications (GSM Systems and Networks, General Packet Radio System (GPRS), CDMA Networks, 3G and Beyond)			●
	Cisco Systems (Cisco Certified Network Associate (CCNA), Cisco Certified Network Professional (CCNP), CCNA Security (Cisco Certified Network Associate Security), Quality of Service (QOS)). Juniper Networks (Operating Juniper Networks Routers in the Enterprise (OJRE), Advanced Juniper Networks Routing in the Enterprise (AJRE)).		●	●
	Communications Electronics (Digital Systems Design using FPGA, Computer Aided Design of Electronic Circuits (OrCAD), Fundamentals of Embedded Systems Design,).		●	●
	Computer Aided Design of Electronic Circuits (OrCAD)	●	●	
	PCB from design to fabrication using OrCAD	●	●	
	Embedded Systems Design	●	●	
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #19: Energy and Renewable Energy Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Energy and Renewable Energy Engineering Program (ERGY)		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of electrical and mechanical power engineering in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of electrical/ Mechanical engineering fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.
A: The Engineering Graduate must be able to (A7, A8, and A10):
A7: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
A8: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
A10: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
The Energy and Renewable Energy Engineering Program graduate must be able to (D-Level):
D1: Model and analyse electrical power systems and electrical machines by applying energy systems concepts of generation, transmission, distribution, and protection of electrical power systems.
D2: Select, analyse, and control appropriate driving systems for different energy applications.
D4: Design of mechanical energy systems using appropriate materials via both traditional and computer-aided tools.
D6: Adopt suitable standards and codes to design, build, operate, inspect, and maintain mechanical energy systems.
D7: Identify, analysis and evaluate the energy's conversion processes and management techniques.
D9: Test and evaluate the performance and suitability of energy systems.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve energy systems engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate concurrent approach to specify and implement different energy systems designs.
4	Propose creative and innovative design/planning solutions for problems facing different projects and evaluate alternatives to solve problems associated with energy system designs.
Psychomotor Domaine	
5	Experience and acquire skills of energy and renewable energy engineering profession via specific real-life situations
6	Produce and create energy systems project briefs and documents
7	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
8	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
9	Be acquainted with profession and market formal and informal language.
10	Exchange knowledge and skills with energy and renewable energy engineering community

	and industry.
11	Collaborate effectively within multidisciplinary team.
12	Work in stressful environment and within constraints.
13	Demonstrate efficient IT capabilities.
14	Effectively manage tasks, time, and resources.
15	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A7	A8	A10	D1	D2	D4	D6	D7	D9
Cognitive Domain									
1	●			●			●		
2		●				●	●	●	
3	●		●	●	●	●			
4		●			●	●			
Psychomotor Domaine									
5	●								●
6		●		●	●			●	●
7			●			●			
Affective Domaine									
8	●								●
9			●						●
10	●	●							●
11		●		●			●		
12		●					●		●
13	●					●	●		
14		●							●
15			●						●

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period attaching training authority's evaluation sheet.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●		
Workshops		●	●		●	●	●	●				●			
Discussion groups											●	●	●		
Research	●	●	●				●						●	●	
Project	●			●	●	●			●	●	●	●	●	●	●
Presentation				●	●					●			●		●

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Electrical Drives/Wind turbines	●	●	●
	Energy Management		●	●
	Power generation/distribution		●	●
Technical and Consultancy Offices	Computer Aided Design Software	●	●	●
	Machine Design drawings	●	●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #20: Computer Engineering and Software Systems Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Computer Engineering and Software Systems		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify software engineer job responsibilities.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen understanding of the fundamentals and theories of computer and software systems.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A2, A3 and A6):
    - **A2**: Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A10**: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
- D: Computer Engineering and Software Systems Program (D1, D3, D4, D5,D7 and D8):
    - **D1**: Design and implement elements, modules, sub-systems or systems using technological and professional tools.
    - **D3**: Estimate and measure the performance of a digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
    - **D4**: Identify needs, plan and manage resources, and gather information for solving a specific digital problem and document and communicate this solution efficiently.
    - **D5**: Carry out design, development, testing, debugging, operation and maintenance of digital systems/services such as computer systems, circuit boards, software systems, and mixed (embedded) systems.
    - **D7**: Select the most suitable technologies to deploy solutions to various kinds of problems and develop solutions using them.
    - **D8**: Abide to software engineering standards and best practices.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, information technology, engineering practice integrally to find solutions to computer engineering problems.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate techniques and algorithms to create and implement different computer engineering designs and software systems.
4	Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
5	Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
Psychomotor Domain	
6	Experience and acquire skills via implementation of different computer system designs.
7	Produce and create design project briefs and documents.

8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domain	
9	Acquire and apply new technologies; and practice self- learning strategies.
10	Be acquainted with engineering ethics and standards.
11	Exchange knowledge and skills with other team members from various specialties.
12	Collaborate effectively within a multi-disciplinary team.
13	Work in and lead a heterogeneous team of professionals from different engineering specialties and assume responsibility for own and team performance.
14	Demonstrate efficient IT capabilities.
15	Effectively manage tasks, time, and resources.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A2	A7	A10	D1	D3	D4	D5	D7	D8
Cognitive Domain									
1	●			●					
2	●		●		●	●			
3	●			●				●	●
4	●	●						●	
5	●		●		●		●		
Psychomotor Domaine									
6	●			●	●	●	●		●
7				●			●	●	
8	●		●		●		●	●	
Affective Domaine									
9			●				●		●
10				●				●	
11	●					●			
12		●				●			
13	●	●		●		●			
14				●	●				●
15		●				●			

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period attaching training authority's evaluation sheet.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (Lab)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project

- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (Lab)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Construction Sites (in both landscape architecture and architecture)	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #21: Building Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Building Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of construction engineers in the field.
- Develop interpersonal, and intrapersonal skills.
- Develop technical skills in structural and construction field.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A7, A8, and A10):
  A7: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
  A8: Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
  A10: Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

- D: Building Engineering Program (D1,D2,D3, D5 and D7):

  D1. Select appropriate and sustainable technologies for construction of buildings, using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics and Fluid Mechanics.
  D2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures, and Transportation and Traffic.
  D3. Plan and manage construction processes; address construction defects, instability, and quality issues; and maintain safety measures in construction and materials.

  D5. Produce designs that meet building users' requirements through understanding the relationship between people and buildings, and between buildings and their environment; and the need to relate buildings and the spaces between them to human needs and scale.
  D7. Demonstrate additional abilities related to the field of the concentration within Design and Production Engineering as listed below.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve civil engineering problems related to building construction.
2	Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.
3	Use appropriate construction techniques and materials to specify and implement different designs.
4	Propose construction engineering decisions considering site analysis characteristics of the sites, balanced costs, benefits, safety, quality, reliability, systems for different structural systems.
5	Propose creative and innovative design/planning solutions for problems facing structural

	design or construction of projects and apply appropriate state of the art software.
Psychomotor Domaine	
6	Experience and acquire skills of construction/ structural design engineers' profession via specific real-life situations
7	Produce and create design project briefs and documents
8	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
9	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
10	Be acquainted with profession and market formal and informal language.
11	Exchange knowledge and skills with construction and structural engineering community and industry.
12	Collaborate effectively within multidisciplinary team.
13	Work in stressful environment and within constraints.
14	Communicate effectively.
15	Effectively manage tasks, time, and resources.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences							
	A7	A8	A10	D1	D2	D3	D5	D7
1					●			●
2				●			●	
3					●	●		
4				●		●	●	
5				●		●		●
6					●		●	
7				●			●	
8					●		●	●
9	●		●			●		
10			●					
11	●		●					●
12	●		●					●
13		●	●					
14	●	●						
15		●	●					

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups

- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Field work (site & office)	●	●	●	●	●				●	●	●	●	●	●	
Workshops		●	●		●	●	●	●							
Discussion groups											●	●		●	
Research	●	●	●				●							●	●
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation										●				●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Software Course based	Technical training courses in the state-of-the-art software related to structural analysis, project management and building information modelling	●	●	●
Field Work/Internships sites	Construction Sites (in structural construction phase)	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

Program #22: Civil Infrastructure Engineering Program

Practical Field Training (PFT) Specifications - Bylaw 2018

1. Basic Information

ENG111	Field Training		0 CH
Prerequisites			
Number of weekly Contact Hours			
Weekly Contact Hours	Number of Weeks		
12	12 / 3 levels		
Required SWL	N/A	Equivalent ECTS	N/A
Course Content			
The major objective of this field training is to put knowledge and skills into practice. It provides students with the necessary skills to work in his engineering specialization. For a sufficient understanding of technical and economic lectures and tutorials as well as a preparation for future work, internships in companies are essential. The field training is one of the substantial preconditions for a successful course of study and it forms an important part of the education. The students should gain insights into engineering practice, knowledge of field relevant aspects of their studies. The trainees should particularly show interest in professional structures within the company. The verification of carrying out the internship according to the guidelines takes place after the start of training.			
Used in Program / Level			
Program Name or requirement		Study Level	
Civil and Infrastructure Engineering Program		1, 2 and 3	
Faculty Requirement		1-4	
Assessment Criteria			
- Students must submit a technical report at the end of the training period. - Students are asked to fill in an online questionnaire regarding their training experience. - Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity			

2. Course Aims

By the completing the practical field training, students will be able to:

- Cope with the lived experience of working environment.
- Identify responsibilities of infrastructure in the field.
- Develop technical, interpersonal, and intrapersonal skills.
- Deepen the understanding of infrastructure fundamentals and theories.

3. Program Competencies Served by PFT

Practical field training is a comprehensive and interdisciplinary experience that traverses several competences that are not limited as adopted by any academic course specifications.

- A: The Engineering Graduate must be able to (A4, A7, A8, and A10):
    - **A4**: Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
    - **A7**: Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
    - **A9:** Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

- D: Civil Infrastructure Engineering (D1-D6):
    - **D1:** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics and Fluid Mechanics.
    - **D2:** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures, Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.
    - **D3:** Plan and manage construction processes; address construction defects, instability and quality issues; and maintain safety measures in construction and materials.
    - **D4:** Deal with biddings, contracts and financial issues including project insurance and guarantees; and assess environmental impacts of civil engineering projects.
    - **D5:** Use the principles of engineering, soil science, biology, and chemistry to develop solutions to environmental problems. They work to improve recycling, waste disposal, public health, and water and air pollution control. They also address global issues, such as unsafe drinking water, climate change, and environmental sustainability.
    - **D6:** Demonstrate additional abilities related to the field of the concentration within Civil Infrastructure Engineering.

4. Learning Outcomes (LOs)

By the end of PFT the student should be able to:

Cognitive Domain	
1	Explore a given “complex system” and how this system may be connected to another complex system to which they have prior knowledge of. Students will be able to identify

Cognitive Domain	
	what are the "variables" of the systems, select relevant ones and explore how the variables are related to each other to develop a (mental) representation of the systems to solve a given non-routine problem.
2	Make tangible connections between the given variables within a complex system (cause effect). They will be able to select the information that is relevant, mentally/physically organize it, and integrate it with relevant prior knowledge to fully explain their relationship within the system.
3	Conduct checks of their goal(s) at each stage, detect unexpected events, take remedial action if necessary, and reflect on solutions from different perspectives by critically evaluating assumptions and alternative solutions – dealing with non-routing problem solving and complex systems thinking.
Psychomotor Domaine	
4	Leverage work experience to strengthen future applications.
5	Produce and create design project briefs and documents
6	Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
Affective Domaine	
7	Acquire and apply new knowledge interchangeably; and practice self, lifelong and other learning strategies.
8	Be acquainted with profession and market formal and informal language.
9	Collaborate effectively within multidisciplinary team.
10	Work in stressful environment and within constraints.
11	Communicate effectively.
12	Demonstrate efficient IT capabilities.
13	Effectively manage tasks, time, and resources.
14	Acquire entrepreneurial skills.

5. PFT LOs Mapping with Level of Competencies

LOs	Competences								
	A4	A7	A9	D1	D2	D3	D4	D5	D6
Cognitive Domain									
1	●				●				●
2	●								●
3	●			●	●				
Psychomotor Domaine									
4		●					●		
5	●		●					●	
6			●						●
Affective Domaine									
7		●				●			
8		●						●	
9					●				●
10		●		●	●				
11							●		
12						●			●
13							●		
14			●					●	

6. Assessment and Feedback Strategy

PFT is assessed interchangeably as follows:

- Students must submit a technical report at the end of the training period.
- Students are asked to fill in an online questionnaire regarding their training experience.
- Training authority is asked to release certificates and fill-in an evaluation form regarding every student joined the opportunity

7. Teaching and Learning Methods

- Field work (site & office)
- Workshops
- Discussion groups
- Research (regarding projects' designs and any technical report)
- Project
- Presentation

8. Learning Method / LO Matrix

Learning Methods	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Field work (site & office)	●	●	●				●	●	●	●	●			
Workshops		●	●	●	●	●								
Discussion groups									●		●			
Research	●	●	●		●						●	●		
Project	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Presentation								●			●		●	

9. Training Strategy

	Content	Sophomore	Junior	Senior-1
Entrepreneurship and Inter &Intrapersonal skills	Ideation, technical, marketing and business crash courses		●	●
	Presentation and communication	●	●	
	Self-motivation, responsibility, and leadership	●	●	●
	Teamwork, flexibility, negotiation and conflict resolution	●	●	●
	Ability to work under pressure and time management	●	●	●
Field Work/Internships sites	Construction Sites	●	●	●
	Finishing phase	●	●	●
	Site management		●	●
Technical and Consultancy Offices	Planning and design		●	●
	Execution drawings		●	●
	Tender documents			●
Competitions		●	●	●
Practice-based workshops in/outside Egypt		●	●	●

QR codes for editable templates

The following QR codes can be scanned to download any needed appendix (editable templates):

Appendix-2
Authority's Opportunity Identification Form
shorturl.at/hqAT3

Appendix-3
A form that is completed by students who attended the practical training
shorturl.at/dnpN9

Appendix-4
Student technical report
shorturl.at/fwKVW

Appendix-5
A form that is filled in by the industrial training supervisor and submitted to the program coordinator
shorturl.at/bnqyD

Appendix-6
PFT annual report
shorturl.at/dqEO7

Explainer video
Training process cycle and types
shorturl.at/iqrBK