

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				
Lecture		Tutorial		Laboratory
0		10		15
Required SWL	300	Equivalent ECTS		12
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 their engineering specialization. For a sufficient understanding of technical and economic aspects through lectures and tutorials as well as internships in companies, in order to prepare students for future work. The field training is one of the substantial pre-conditions 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 different fields with 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				
<ul style="list-style-type: none">- 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				
Student Activities		Mid-Term Exam	Practical Exam	Final Exam
100%		0%	0%	0%

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	Teamworking 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 Domain						
4	•	•	•	•	•	•
5	•	•	•	•	•	•
6	•	•	•	•	•	•
Affective Domain						
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

Level	Sophomore	Junior	Senior-1
Training Strategy	"Students at this level study courses related to the	Students at this level study courses related to the	Students at this level study courses related to

Level	Sophomore	Junior	Senior-1
	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”	Design and Production Engineering requirements. Accordingly, the proposed objectives of the training include exposing the students to engineering systems such as	the Design and Production Engineering concentrations. Accordingly, the proposed objectives of the training include exposing the students to engineering environments involving
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 steel plants, machining workshops, etc.	Calculation and minimization of costs and conducting value engineering.	Analysis and design of 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	Prepare business plans and feasibility studies for new startups



Level	Sophomore	Junior	Senior-1
		Construction sites.	