



MIDDLE EAST TECHNICAL UNIVERSITY
NORTHERN CYPRUS CAMPUS
Internship Guideline
of
Mechanical Engineering Program

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TABLE OF CONTENTS

1. OBJECTIVE.....	3
2. GENERAL ISSUES.....	3
3. FORMAT OF SUMMER PRACTICE REPORT	5
4. CONTENT OF THE MAIN PART	
MECH 300 Summer Practice I.....	6
MECH 400 Summer Practice II.....	6
5. APPENDICES	
App.1: Cover Page	10
App. 2: Form to be filled by the inspector.....	12
App. 3: Form to be filled by dept./workshop managers of company	13
App. 4: Work Summary Page to be filled by supervising engineer	14

Summer Practice Guideline for Mechanical Engineering

1. OBJECTIVE

This guideline provides the rules and the procedure related to summer practices, outline the content of the trainings and describes the format of the Summer Practice Report for mechanical engineering students, in accordance with Middle East Technical University Northern Cyprus Campus Engineering Programs Summer Practice Regulations.

Definitions:

In this guideline, the following terms will be used hereafter:

University: Middle East Technical University Northern Cyprus Campus Program: METU NCC Mechanical Engineering Program Coordinator: Academic staff administering the summer practice affairs of the program Company: The establishment where the summer practice will be carried out. Supervisor: The engineer of the company who is responsible from student Practice I: MECH 300 Summer Practice I Practice II: MECH 400 Summer Practice II

2. GENERAL ISSUES

Students of the Mechanical Engineering Program are required to participate in two industrial summer practice programs, MECH 300 Summer Practice I (NC) and MECH 400 Summer Practice II (NC), in addition to the fulfillment of course and laboratory studies as required by the B.S. Degree curriculum. The aim of two practices is to let students get exposed to the professional life applications and acquire hands-on experience with practical knowledge.

- Summer practices are regulated by the Board of Engineering Programs.
- The Summer Practice Regulation for Engineering Programs, the Mechanical Engineering Summer Practice Guideline and some announcements related to Summer Practice are accessible from the website <http://users.metu.edu.tr/nccmesp/>.
- MECH 100 Introduction to Mechanical Engineering, MECH 114 Computer Aided Engineering Drawing II, and MECH 202 Manufacturing Technologies, and OCHS 101 Occupational Health and Safety-1 are the prerequisite courses with a grade minimum DD for MECH 300 Summer Practice I. OCHS 101 is not a prerequisite for students who admitted to Mechanical Engineering Program before 2018-2019 Academic Year. A regular student is expected to participate in the first practice in the summer following the 4th semester and register for MECH 300 in the following semester.
- A satisfactory grade for MECH 300 Summer Practice I is expected for starting MECH 400 Summer Practice II. It is also strongly recommended that the courses MECH 311 Heat Transfer, MECH 305 Fluid Mechanics, MECH 303 Manufacturing Engineering, MECH 307 Mechanical Engineering Design and ECO 280 Engineering Economy have been taken with a grade min. DD, before, by consent of the Program. A regular student
- is expected to participate in the second practice in the summer following the 6th semester and register for MECH 400 the following semester.
- If the semester course load of a student is less than the 1/3 of the normal total credit of the semester and if it is proposed by the advisor of the student, with the consent of the coordinator, the student may be allowed to participate in a practice during the fall or the spring semesters.
- Each summer practice shall be at least 20 working days (1 working day is 8 hours,

including 1 hour lunch break).

- Summer practice cannot be done while attending another course in summer school. Summer practice is supposed to be a full-time occupation.
- It is the student's responsibility to find an appropriate company for the summer practice. The process is to be initiated by the student taking a form from the Summer Practice Coordinator of the Program indicating that the student is obliged to conduct a summer practice. This form is to be submitted to the company (Some companies may require students to have the application online through the web page of the company). The student must take a letter of acceptance from the company and provide it to the coordinator within the specified deadline. A list of companies previously approved by the program can be seen in the summer practice website. This is not a comprehensive list and the students may choose companies that are not on this list provided that information about the company is to be attached to the letter of acceptance. Students shall commence the practice after the approval of the coordinator.
- The summer practice quotas available to the Program are allocated to the prospective students by the Program giving priorities in order of graduation, status, academic achievement, and the use of previous summer practice assignments, or by drawing lots.
- Student shall do the Summer Practice II in a different company if the Practice I has previously been conducted in a small scaled one.
- Summer practice shall be done at an institution employing at least two full-time professional engineers of the field of practice. This does not include the consultants, part-time engineers, graduate students, part-time professors etc. The practice shall be supervised by a mechanical engineer.
- During the entire period of practice, the student shall obey the rules and regulations of the company and also those of the University.
- Due to inevitable reasons, if the student will not able to attend the practice for few days with the permission of the supervisor, the coordinator shall be informed via e-mail (The mailing address is available at the Summer Practice web page) and these days shall be compensated later.
- Three documents are to be submitted to the coordinator at the end of the internship for the evaluation of the summer practice: (i) Summer Practice Report by uploading it in SPME (in pdf format) and also in METU-Class (after course registration, in Microsoft doc format), (ii) Summer Practice Company Evaluation Form (the supervisor shall fill in this grading form in SPME environment), (iii) Work Summary Sheet (the hard-copy of this sheet will be filled in by the student, be signed and stamped by the supervisor and then uploaded in SPME by the student and that upload will be approved by the supervisor)
- The supervisor shall fill in the evaluation form in SPMS environment
- Upon the completion of summer practice, 'Summer Practice Report' must be submitted to the summer practice coordinator through SPME and METU-Class by the midnight of the second day of the weekend holiday which follows the course add-drop period of the new term. (For the students allowed to participate summer practice during the semester, the due date for submitting the practice report is the last day of classes). **Internship reports of those who submitted the internship report without having all the chapters or with incomplete content and/or without submitted the solid model and engineering drawing files, will not be taken into evaluation. In this case, student's internship will be directly graded as U-Unsatisfactory.** The report must outline the experience and observations gained through practical training, in accordance with the required content and the format described in this guideline. Each report will be evaluated by an academic member of the Program on a satisfactory/unsatisfactory basis. The evaluating academic member may require the student to take an oral presentation/exam. If the evaluation is incomplete or it has some mistakes, it shall

be returned to the student for revision and/or rewriting. If the revised report is still unsatisfactory the student shall be requested to repeat the summer practice.

- The student may be inspected by an academic staff during the practice. If it is reported by the inspector that the student was absent at the day of inspection, the coordinator may use the right to evaluate the practice of the student as unsatisfactory.
- It is not allowed to be enrolled for Summer Practice II before the student gets a passing grade from Summer Practice I. Performing two summer practices at the same term are not allowed unless the approval of the Campus Administration on the basis of a force-majeure excuse.

3. FORMAT OF SUMMER PRACTICE REPORT

- 1 The report shall comply with the summer practice program principles.
- 2 The report shall be in English.
- 3 The report shall be submitted by uploading in METU NCC Summer Practice Management environment (SPME), (log in the environment through <http://intranet.ncc.metu.edu.tr/>) and also in METU Class Environment, in “pdf and doc” format, respectively.
- 4 Main headings are to be centered and written in capital boldface letters. Sub-titles shall be written in small letters and boldface. The typeface shall be Arial font (or an equivalent) with 12pt. All margins shall be 25 mm.
- 5 The SI (Metric) system shall be used for units.
- 6 Drawings shall conform to acceptable engineering standards.
- 7 Each report shall contain the following sections
 - a) Cover Page (See Appendix 1)
 - b) Work Summary page (See Appendix 4) (The original, hard copy of this document shall be submitted to Summer Practice Coordinator)
 - c) TABLE OF CONTENTS (Shall have the corresponding page numbers)
 - d) LIST OF FIGURES AND TABLES (Shall have the corresponding page numbers)
 - e) INTRODUCTION (In this part, the aim and scope of the summer practice should be presented briefly and the DESCRIPTION OF THE COMPANY shall be given including the following information:
 - Name of company
 - Location of company
 - Organizational structure of the company
 - Number and duties of engineers employed
 - Main areas of business
 - A brief history of the company
 - f) MAIN PART: (In this section, a detailed description of everything that has been done and observed during summer practice should be given with special consideration for the program outlined by the related program for the third and fourth year students. The necessary data, tables and diagrams should be numbered and placed in the

- "APPENDICES" part)
- g) CONCLUSION: In this section, data obtained and the experience gained during the summer practice should be assessed, recommendations should be made
 - h) REFERENCES: In this part, all the documents referred to in the report text should be listed. Reference items should include author's name, year of publication, title of the work, title of publication, volume, number, and page numbers
 - i) APPENDICES: All related data, tables and drawings should be given in this section

4. CONTENT OF THE MAIN PART

4.1 MECH 300 Summer Practice I:

The students are essentially expected to practice on manufacturing processes such as machining, foundry work, metal forming, welding, non-traditional machining, heat treatment of materials, finishing, etc. This part of the report is to reflect the work carried out personally by the student on manufacturing processes of at least 2 typical products of the company. At first, the student is expected to learn the safety rules and regulations to be observed in the work place. These shall be summarized at the beginning of main part of the report. This part should also include:

- List of typical products manufactured in that department and their descriptions
- Description of the department or workshop where the work is performed
- Manufacturing processes, machines and tools used
- Principles of machines, quality control and measurement methods, tools and instruments used in the processes
- Analysis of manufacturing stages of at least 2 typical products (the ones not so simple like a cylindrical bar or a rectangular prism!), by referencing to their working drawings, in detail and the manufacturing cost analysis for them
- Working drawings of these products, they shall be provided in Appendix in the report
- The solid model and working drawings shall be created in a common solid model environment, preferably in Autodesk Inventor environment. The files will be uploaded as the appendices of Summer Practice Report in SPME

4.2 MECH 400 Summer Practice II

Students are essentially required to practice in a suitable factory, a power station, or an engineering design and consultancy office. They are expected to get acquainted with a real industrial environment by active participation in its various aspects including managerial and engineering practices. Possible fields of summer practice are as follows:

- 1 . Production Units
 - (a) Factories
 - (b) Power plants
- 2 . Engineering Design, R/D and Consulting Offices
 - (a) Design and/or R/D departments of factories
 - (b) Design and/or R/D and engineering consulting firms
 - (c) Project planning and/or R/D departments of state and public enterprises

4.2.1 Summer Practice in Factories (It is strongly recommended that the courses MECH 303 Manufacturing Engineering, MECH 307 Mechanical Engineering Design have been taken with a grade min. DD, before)

Student shall give detailed information about:

- Products and description of production processes (What are the products and

production processes used in the organization? Production processes may be casting, forging, plastic injection, advanced composite production, machining, assembly operations, finishing, weaving, sewing, etc. Supply process chart/operation process chart/flow diagram/operation chart for assemblies, subassemblies, products or processes.)

- Description of production system
- Layout type
- Reasons for the selection of present location for this plant
- Cost analysis of a product or a production process: Information about how material, labor and overhead costs are computed and how unit manufacturing cost is calculated for a product
- Information about the hardware, software and information systems in the organization (Utilization of hardware and software in the organization. Types of data and/or information transferred among departments. Media, e.g. computers, used for this purpose. How the transferred data and/or information are processed and for what purposes these are used, etc.
- Measurement methods and applications on which the decisions are based on: For instance, different methods for job evaluation are used, such as job ranking, the point method, to determine relative worth of each job and corresponding wage rate. Measures of material productivity, labor productivity, capacity utilization etc. can be the examples of performance measurement and efficiency analysis. Cost monitoring, which is the process of collecting, recording, organizing and interpreting cost data for any cost object, is another example for measurement applications.
- Quality system, assurance and control practices in the organization: Quality system management, quality control, inspection methods and equipment, physical measurement devices, calibration, non-destructive tests are some of the subjects that can be discussed under this topic. If there is a quality control or quality assurance department in the organization, what are the responsibilities? If there is none, how are quality related jobs achieved? recommendations
- Occupational safety rules and practices: Safety rules and practices are required for creating a safe and healthy work environment for employees. Investigation of accidents in work places and records of accidents, safety training, safety equipment such as masks, helmets, gloves, fire-proof clothing, responsibilities of person(s) for the implementation of safety regulations, department of safety, can be some of the items to be mentioned in this part.
- Environmental concerns: Policy of the organization towards environmental pollution, pollution prevention activities, and treatment technologies can be possible items to be explained in detail here.
- Energy Efficiency: Energy conversion systems, energy utilization efficiency at the factory/work place.
- Continuous improvement efforts: All improvement activities like energy saving projects, scrap reducing processes, cost reduction, research and development, market research, evaluation of customer satisfaction, e-business, project management, etc.
- An assessment of maintenance and repair services in the factory.

4.2.2 Summer Practice in Power Plants (It is strongly recommended that the courses MECH 305 Fluid Mechanics and MECH 311 Heat Transfer have been taken with a grade min. DD, before)

1. An assessment of the site plan.

2. Description of the energy production system.

(a) Source of energy (e.g. hydraulic, thermal, nuclear, etc, a complete analysis of the source in terms of its quality, capacity, efficiency and availability).

(b) Description and assessment of each unit (e.g. turbines, boilers, control units, generators, electric distribution units, etc.)

(c) Assessment of raw material storage facilities (e.g. storage and transportation of coal, fuel-oil

and water, flow rate etc.)

(d) Assessment of safety rules and practices.

(e) Production planning.

3. Usage of software in management and production. Hardware and software used should be described.

4. Assessment of the automation level in the plant.

5. Assessment of quality assurance and control systems used in the plant.

6. Cost analysis (unit cost of produced energy).

7. An assessment of the future development plans of the plant.

8. A study of the plants share in environmental pollution and of preventive measures taken.

9. An assessment of maintenance and repair services in the firm.

4.2.3 Summer Practice in Design, R/D and Consulting Offices (It is strongly recommended that the courses MECH 305 Fluid Mechanics and MECH 311 Heat Transfer have been taken with a grade min. DD, before. For the students they will participate in Research/ Development Centers/ Institutes min. 3.00 CGPA is required)

1 Description and an analysis of at least two of the typical projects completed by the firm.

2 An assessment of the methods adopted by the firm in receiving jobs and delivering the final project.

3 A detailed explanation of the contribution of the student to one of the projects during the summer practice (detailed calculations and drawings should be included in the appendix)

4 Assessment of quality assurance and control systems used in the firm.

5 Usage of software in management and technical aspects of the projects. Hardware and software used by the firm, and the level of automation in the firm should be described.

6 Cost analysis of at least one of the projects carried out by the firm.

7 An overview of the projects and the company structure, in conjunction with the position of the firm in the domestic and foreign markets, and the overall of the firm with the world markets.

8 An assessment of future development plans.

APPENDICES

Appendix 1: Cover Page	10
Appendix 2: Form to be filled by supervising engineer of company	11
Appendix 3 Form to be filled by the inspector	12
Appendix 4 Work Summary Page to be filled by supervising engineer	13

Appendix 1: Cover Page



**MIDDLE EAST TECHNICAL UNIVERSITY
NORTHERN CYPRUS CAMPUS**

Mechanical Engineering Program

MECH 300

(or MECH 400)

SUMMER PRACTICE REPORT

Name of Student :

ID Number :

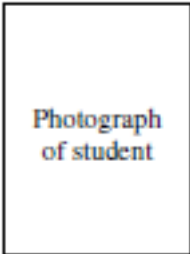
Name of Company :

Date of Submission:

Selected Field (for MECH 400):

Factory, Thermal Power Plant, Engineering Design-Consulting Office, R&D Center/Office

Appendix 2 (To be filled by supervising engineer in company)



CONFIDENTIAL

Summer Practice Evaluation Form ☆

Student Name :
 Company Name :
 Company Address :
 Company Phone # :
 Starting Date :/...../.....
 Completion Date :/...../.....
 # of workdays : days

EVALUATION

	Excellent (Please comment)	Good	Satisfactory	Unsatisfactory (Please comment)
Attendance				
Diligence and enthusiasm				
Contribution to work environment				
Overall performance				

Comments:

Supervisor's Name:

Title:

Signature and

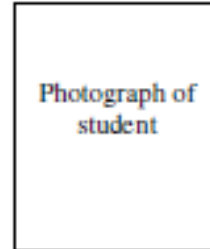
Date:

Company Seal

☆This form is to be filled in by the Supervisor on the last day of the internship in SPME environment. It is recommended that the student is to remind the supervisor for filling the form.

Appendix 3 (To be filled by the inspector)

Student Name :
ID Number :
Name and Address
of the Company :



Inspector's Name :	Date of Inspection	Signature
1)...../...../.....
2)...../...../.....
3)...../...../.....

Comments:

Comments:

Comments:

Appendix 4

WORK SUMMARY		
Work Day	Date	Work Description
1	.../.../.....	
2	.../.../.....	
3	.../.../.....	
4	.../.../.....	
5	.../.../.....	
6	.../.../.....	
7	.../.../.....	
8	.../.../.....	
9	.../.../.....	
10	.../.../.....	
11	.../.../.....	
12	.../.../.....	
13	.../.../.....	
14	.../.../.....	
15	.../.../.....	
16	.../.../.....	
17	.../.../.....	
18	.../.../.....	
19	.../.../.....	
20	.../.../.....	
Student's Name: Date: Signature:		Supervisor's Name: Date: Signature: COMPANY SEAL

METU NCC- Internship Guideline

Work Day	Date	Work Description
21	.../.../.....	
22	.../.../.....	
23	.../.../.....	
24	.../.../.....	
25	.../.../.....	
26	.../.../.....	
27	.../.../.....	
28	.../.../.....	
29	.../.../.....	
30	.../.../.....	

Student's Name:

Supervisor's Name:

Date:

Date:

Signature:

Signature:

COMPANY SEAL