



**MIDDLE EAST TECHNICAL UNIVERSITY
NORTHERN CYPRUS CAMPUS**

**Summer Practice Guideline
for
Mechanical Engineering**

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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 www.metu.edu.tr/~nccmesp/
- MECH 202 Manufacturing Technologies is the prerequisite with a grade minimum DD for MECH 300 Summer Practice I. 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 required 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 differ than NA before. 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.
- Summer practice cannot be done while attending the 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.
- The student shall submit two documents to the coordinator for the evaluation of the summer practice: (i) Summer Practice Report, (ii) Summer Practice Company Evaluation Form. It is the student's responsibility to download the relevant documents from the summer practice website.
- The evaluation form given in Appendix 3 shall be given to the company by the student. It is expected to be filled by a full time professional engineer, considering the performance, attendance, enthusiasm, interest and general involvement of the student. This form is expected to be mailed to the Program directly or hand-delivery by the student in a signed and sealed envelope. It is the student's responsibility to make sure that the coordinator receives the form before the deadline. If the form is not received

or if the supervising engineer's evaluation is not satisfactory, the student may be found unsatisfactory and will be requested to repeat the practice.

- Upon the completion of summer practice, a hard copy of 'Summer Practice Report' must be submitted to the summer practice coordinator by the last day of the 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). 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 have an oral presentation/exam. If the evaluation is unsatisfactory, 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, prepared with a PC and printed.
3. 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. The report shall be submitted in printed and filed. An electronic copy of the report shall be recorded in a CD and enclosed in the report.
4. The SI (Metric) system shall be used for units.
5. Drawings shall conform to acceptable engineering standards.
6. Each report shall contain the following sections
 - a) Cover Page (See Appendix 1)
 - b) Page of Approval and Grading (See Appendix 2)
 - c) Work Summary page (See Appendix 5)
 - d) TABLE OF CONTENTS (Shall have the corresponding page numbers)
 - e) LIST OF FIGURES AND TABLES (Shall have the corresponding page numbers)
 - f) 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
- g) 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 "APPENDIX")
- 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) CONCLUSION: In this section, data obtained and the experience gained during the summer practice should be assessed, recommendations should be made
- j) APPENDICES: All related data, tables and drawings should be given in this section

4. CONTENT OF THE MAIN PART

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. 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. Additional material for this part includes:

- Description of the department or workshop where the work is performed
- List of typical products manufactured in that department and their descriptions
- Manufacturing processes, machines and tools used
- Analysis of manufacturing cost for at least 2 typical products with technical details
- Technical drawings (i.e. detailed drawings) of these products, they shall be provided in Appendix
- Principles of machines, quality control and measurement methods, tools and instruments used in processes

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

Summer Practice in Factories

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.

Summer Practice in Power Plants

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 plant.

Summer Practice in Design, R/D and Consulting Offices

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 plant.
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

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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 :

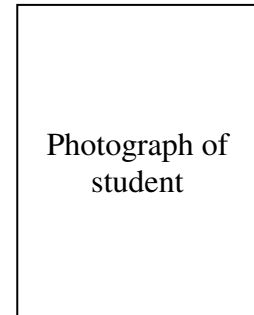
Appendix 2: Page of approval and grading (To be filled by evaluating academic member)

STUDENT' s

Name :

ID Number :

Signature :



PRACTICE (300/400) : **MECH**

NAME AND ADDRESS

OF COMPANY :

.....

Starting Date :/...../.....

Completion Date :/...../.....

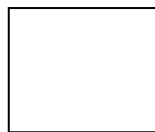
Total Working Days : days

ACADEMIC STAFF WHO

EVALUATED THE PRACTICE

Name :

Grade (S/U) :

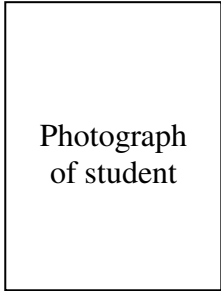


Signature :

Date :/...../.....

Appendix 3 (To be filled by supervising engineer in company)

 **MIDDLE EAST TECHNICAL UNIVERSITY**
NORTHERN CYPRUS CAMPUS
Mechanical Engineering Program



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

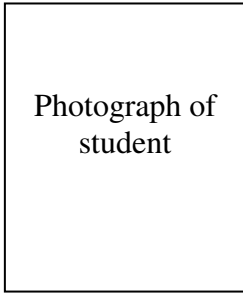
Date:

Company Seal

Please send this form to the Summer Practice Coordinator. A copy of this form is expected to be kept in company archives.
Mailing Address: ODTÜ Kuzey Kıbrıs Kampusu, Makina Mühendisliği Programı, Güzelyurt, KKTC Mersin 10 Turkey (If the form is to be delivered by the student, then please place it in a signed and sealed envelope)
 E Mail: mech@metu.edu.tr

Appendix 4 (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 5 Form to be filled by supervising engineer

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:		Supervisor's Name:
Date:		Date:

Signature:		Signature:
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: