



YILDIZ TECHNICAL UNIVERSITY  
FACULTY OF MECHANICAL ENGINEERING  
DEPARTMENT OF INDUSTRIAL ENGINEERING  
WORKSHOP INTERNSHIP GUIDE

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## **Preface**

This guide contains general information and frequently asked questions about workshop internship for the students of Industrial Engineering Department at Yıldız Technical University. All students should read this manual carefully before starting the internship.

## PLEASE READ THIS GUIDE CAREFULLY.

### 1 General Information

This internship guide is subject to Yildiz Technical University Undergraduate Teaching Internship Application Directive (Click for the instructions). General information about the internship can be found at (Click here). All students studying at the Industrial Engineering Department of Yildiz Technical University are obliged to do a 20-day workshop internship.

Internships should be carried out in companies that conform to the required features. The student should prepare an internship report by following the instructions given below. The explanations regarding all questions must be included in the internship report. Issues not involved in this guide will be decided by the department workshop internship commission.

### 2 Workshop Internship Principles

In this section, general principles of workshop internship are given.

#### 2.1 Company Requirements

- A student can fulfill his/her internship domestically or abroad.
- **There must be at least one industrial, mechanical, metallurgical, mechatronics or naval architecture engineer in the company.**
- All relevant places in the Internship Registry Form must be filled, signed and approved by the mechanical, industrial, metallurgical, mechatronics or naval architecture engineers working in that workplace. The engineer's name, surname, professional title, **registration number in the relevant professional chamber or diploma number (together with the university he/she graduated from)** must be specified.
- **There must be at least three different production methods in the company and at least one of these methods must be a machining method specified in this guide.**
- Studies which are not related to the industrial engineering profession or do not include actual work (courses, seminars, etc.) will not be accepted.
- A student is responsible for finding a company to perform internship.
- Internship must be done in a production facility. Enterprises that perform only repair, maintenance and installation activities are not accepted.

#### 2.2 Internship Report

- Each student is obliged to prepare an internship report as specified in this guide.
- Students who do not submit their internship report to the internship office **within 1 (one) month** from the end of the internship will be considered unsuccessful.
- An internship report should be prepared in the order determined in this guide.
- A student must answer **all the questions following the order** specified in this guide. (It is the responsibility of the student to answer all the questions completely. The company's failure to provide information is not accepted as an excuse. To avoid this situation, the student must confirm with the company that he/she can obtain the information and documents regarding the questions in the directive before starting his/her

internship and have the Workshop Internship Firm Introduction Form approved by the workshop internship committee.)

- Internship dates and departments must be specified on the internship work plan on the first page.
- The internship report, which is given on the department web page as "Industrial Eng. Internship Book (Endüstri Müh. Staj Defteri)", should be prepared in Word format. Internship books submitted by hand or scanned may be requested to be rewritten or directly rejected.
- The internship report is archived for 2 (two) years (Yıldız Technical University Undergraduate Education Internship Application Directive, Article 6).
- Internship reports, which are similar to each other more than 50%, will be rejected.
- Internship reports copied from another internship report will be rejected.
- An internship report whose content mostly relies on theoretical information from books will be rejected.
- If information from the internet or other sources is detected, the internship report may be rejected. Information used from external sources should be written in your own words and cited in an appropriate format.
- The internship committee can arrange a written or an oral exam during the internship evaluation period.
- If the internship committee is not able to decide on whether the student is successful, the student takes an oral exam performed by the internship committee. The internship report of the student who fails in this exam is rejected. Students who do not to attend the oral exam will be considered as **failed**.
- Students whose internship is rejected must repeat the same internship at a **different** company.
- The "Workplace Notebook Approval Form (İşyeri Defter Onay Formu)" indicating that the internship book has been checked by the authorized person in the company must be signed and stamped when the internship report is delivered. The signatures on the documents must be signed by the responsible engineer at the company.
- Internship report must be filled in English by the students registered to %100 English program and in Turkish by the students registered to %30 English program.

### 2.3 Double Major and Transfer Students

- Whether or not the internship studies of the Double Major Program (ÇAP) students will be accepted in the other department is decided upon the application of the student, the approval of the workshop internship committee, the proposal of the department chair and the approval of the faculty board of directors.
- Whether the internship studies of the transfer students are accepted or not will be decided upon with the application of the student, the appropriate opinion of the workshop internship commission, the proposal of the department chair and the approval of the faculty executive board (Article 5.6).
- Yıldız Technical University Course Equivalence and Adaptation Principles, in accordance with Article 1, the student must apply for equivalence (exemption) with a petition to the head of the department in which he is registered, within the first week following the registration date at the latest. The courses (internship) required to be adapted in this petition attachment,

- Teaching Plan (Theory-Practice-Laboratory-Credits / T-U-L-K), (Document showing the internship that the student is responsible for in the curriculum)
- Course Contents (The purpose, scope and weekly lesson plan of the course), (Document showing the internship content)
- Transcript, (The document showing that the internship is accepted) should take place. The above-mentioned documents must be signed, stamped and sealed by the officials of the Faculty / Institute / School or Student Affairs Office.

## **2.4 General Principles**

- Internship students should work in the workplace as an engineer or employee in compliance with all conditions and rules of that workplace.
- The student is obliged to obey the regulations, directives, and working rules of the workplace where he/she does internship. The student has to do and participate in the studies to be given by the relevant authorities during the internship.
- There is an obligation to attend the internship.

## **3 Writing the Internship Report**

Internship report should be written according **to the order given** in this section. The requested methods should be explained in detail and should not be in a listed format only.

### **3.1 Information About the Company**

Please provide the following information about the company:

- Describe the business name, address, field of activity, date of establishment, establishment and development.
- Provide information on the number of employees (workers, technicians, engineers, administrative personnel, etc.).
- Provide information about the products, production capacity and material supply methods. Provide information about the raw materials and materials used in the company.

### **3.2 Technology**

- Describe the production and automation technologies in the plant.
- Describe Industry 4.0 concept.
- Describe Industry 4.0 activities in the enterprise. If there is no such activity, give some examples about what activities can be established.

### **3.3 General Information about the Workshop**

- Show the detailed layout of the workshop(s) you are working with a new sketch, indicating the following factors:
  - Workshop entrance and exit (doors)
  - Location of the machinery

- Stock/inventory keeping areas
- Material handling equipments
- Give brief background information about facility layout types (Product-oriented, processoriented, project type, hybrid, cellular, functional, etc.).
- Which of these layout types does fit to the layout type of the workshop(s) you are practicing in? Is this layout type(s) suitable for the production process of the workshop (please state whether it is appropriate or not)?
- Indicate the measures taken for occupational health and safety in the workshop and explain the risky situations you have encountered.
- Describe the maintenance activities, periods, as well as the duties and responsibilities of the maintenance personnel.

### 3.4 Manufacturing Methods

- What manufacturing methods (machining/chipless/welding/casting) are used in the workshop? Classify and explain.
  - Machining processes: Turning, drilling, milling, planing, grinding.
  - Chipless manufacturing processes: Forging, extrusion, rolling, wire drawing, pipe manufacturing (seamless and welded), sheet forming (cutting, bending, stretch forming, deep drawing, etc.).
  - Welding: Arc welding, submerged arc welding, gas metal arc welding (MIG/MAG), cutting, etc.
- Give detailed information about the machine tools used in the workshop, their types, numbers and features of these machine tools. Provide the following information in detail for each machine:
  - Types of cutting tools and their properties
  - Holding devices used for both workpieces and cutting tools
  - Processes conducted in that machine tool
- Give information about technical drawings, sketches, Kanban cards, work orders, etc. being used in production processes.

### 3.5 Applications

In the context of workshop internship, each student is expected to perform **at least one** manufacturing application and three process improvement/problem analysis application.

#### 3.5.1 Manufacturing Application

Select a workpiece manufactured in the company and processed with 3 different manufacturing steps, i.e., at least three different production methods, (and at least one of these steps must include one of the machining processes indicated above) to perform the applications given below (Please keep in mind that you should select an appropriate workpiece to be able to perform all the applications):

- State the name and the function of the workpiece.
- State the machine tools/machinery, materials, and manufacturing technologies utilized in the manufacturing of the workpiece.

- State the material supply process during the manufacturing of the workpiece.

#### **Geometric Information:**

- Compose the technical drawing of the workpiece (Please see Appendix 1 for an example of a technical drawing.).
  - Technical drawing(s) will be composed with the help of a technical drawing software.
  - Technical drawing(s) must be composed by carefully following the principles of technical drawing techniques. Technical drawing(s) must be supplemented with letterheads including the name of the workpiece, student name and surname and student ID. Provide the required dimensioning and **three dimensional views**.
  - Technical drawing(s) must not be pasted on the pages of the internship report. Instead, **the output of the technical drawing that is framed and signed by the company should be given in a separate file. Technical drawings with dwg extension should be sent to the e-mail address with the documents.**
  - Technical drawing(s) must be stamped and signed by the responsible engineer.

#### **Technological Information:**

- State the specifications of the material used in the manufacturing of the workpiece using the required standards.
- State each one of the manufacturing step of the workpiece and specify them on the technical drawing.
- State each one of the holding devices used for both workpieces and cutting tools in each step.

#### **Calculations:**

- For each manufacturing step, state the parameters indicated below:
  - For each machining step (e.g., turning), state required parameters (cutting edge angle, cutting speed, feed rate, depth of cut, etc.).
  - For each chipless manufacturing step (e.g., sheet forming), explain the selection of required parameters (force, speed, etc.).
  - For manufacturing steps related to welding, state the welding techniques, welding materials (e.g., welding wire(s), welding sand, welding electrode(s)), gas types used, weld groove types, welding parameter selection (e.g., welding speed, welding current).
- State manufacturing time for each manufacturing step. If necessary, calculate.

#### **Process Information:**

- Indicate value adding and non-value adding (e.g., transportation, inspection, idling) activities for the workpiece you inspect and state their durations.
- Indicate value adding and non-value adding activities by drawing process flow diagram (Please see Appendix 2 for a hypothetical process flow diagram. In addition, you must consider the whole process from the raw material supply to delivery.). You need to indicate processes that create added value and which ones do not (indication methods such as coloring can be used) on the flow chart or as a separate table.



- State all of the inputs, outputs, operations, and sources for the whole process (You must consider the whole process from the raw material supply to delivery.).

### 3.5.2 Process Improvement/Problem Analysis Application

- Six Sigma
- Pareto Analysis
- Fish bone Diagram
- Statistical Quality Control and Control Charts
- Bench-marking (The information of the company to be benchmarked should be given.)
- SWOT Analysis
- Histogram
- Simulation

**NOTE: While performing the analyzes, it should be explained in detail how the data are obtained and how the operations are performed.**

- Determine at least 3 different problems/insufficiencies regarding the processes in the company.
- Analyze these three different problems/insufficiencies by using three different analysis techniques that are chosen from the list below.
- Propose solutions to these problems/insufficiencies.
- Determine the resources required for your solutions (human resources, knowledge, software, hardware, etc.).

### 3.6 Internship Assessment, Results, and Conclusions

- Provide a general assessment of your internship. State your experiences.
- Did you conduct any study requested by the company? If yes, please specify.
- State any exceptional cases and any difficulties during your internship. Please state any suggestions and complaints about your internship.

## 4 Internship Evaluation Process

- Internship Registry Form (Staj Sicil Formu), Internship Book, Workplace Internship Book Approval Form (İşyeri Staj Deferi Onay Formu) and Employer Questionnaire (İşveren Anketi) signed and stamped by the authorized person of the internship place are delivered to the specified e-mail address (endstajatoIye@gmail.com) within 1 (one) month at the latest after the completion of the internship. Internship reports which are not submitted within one month following the end of the internship will not be evaluated by the commission (Yıldız Technical University Undergraduate Education Internship Application Directive, Article 4.7).
- Internship report is evaluated by one of the commission members **within one month** by considering the points presented in Section 3. After the evaluation;
  - An internship report which does not conform to this guide will be rejected.
  - An internship report requiring revision is sent back to the student.

- An internship report satisfying all the requirements is accepted.
- Each student whose internship report needs revision must revise his/her report **within one month**. Otherwise, his/her internship report will be rejected (Yıldız Technical University Undergraduate Education Internship Application Directive, Article 5.5).
- Communication with the student whose internship report is requested to be corrected is established via the e-mail address specified in the Internship Report Submission Form (or used while submitting the report). The student is responsible for correcting his/her report of the correction e-mail sent by the commissioner. The sent correction e-mail is a submission for correction.
- If there are still missing information after the revision, the internship report will be rejected.

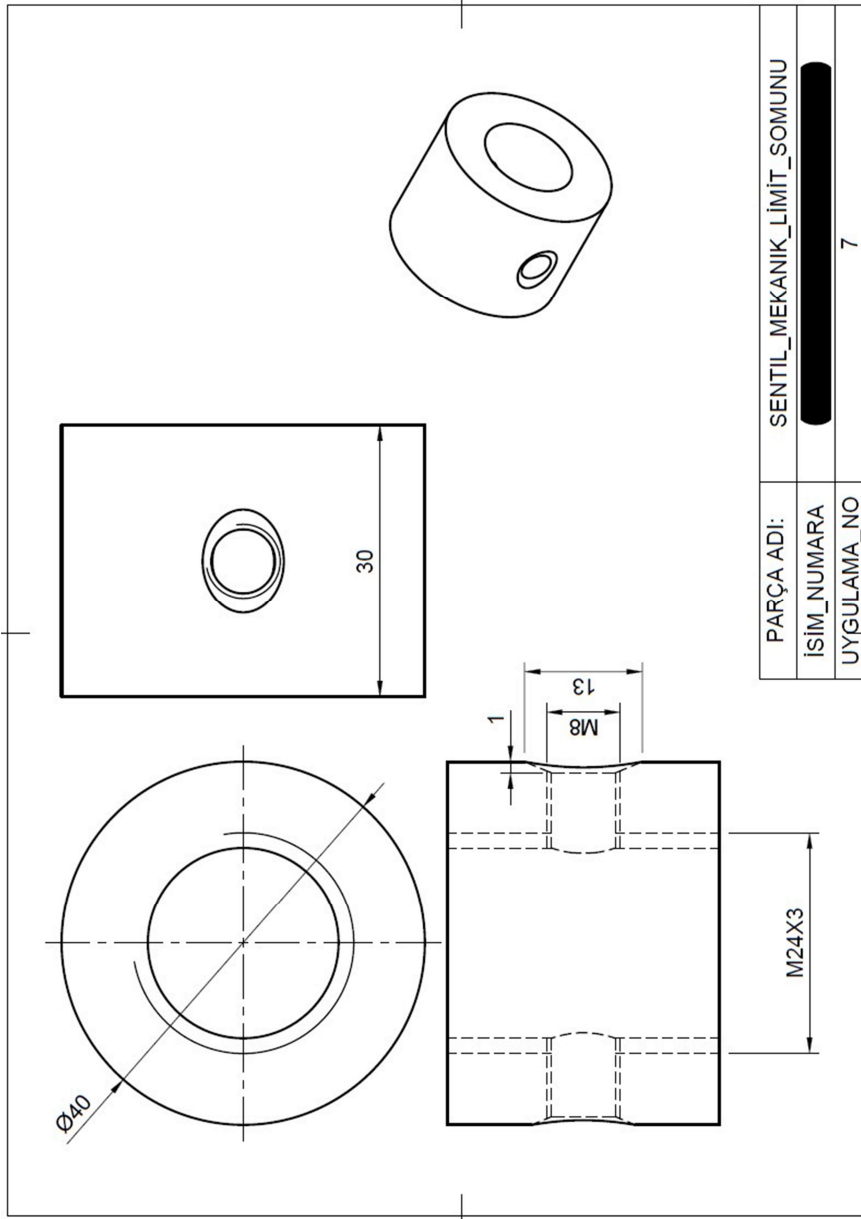
## 5 Warnings

- Each application must contain all the required information specified in this guide.
- Internship reports (including the theoretical information and the applications) of the students conducting their internships at the same company with the same time period must be different from each other (You can avoid this by stating the theoretical information with your own words.).
- Along with the delivery of the internship report, the students receive a digital copy of the drawings (technical drawings) with the .dwg extension and pdf version, the internship report, the control list and the related documents as announced on the department page (Workplace Internship Book Approval Form, Internship Registry Form, Industrial Engineering Department Internship Book Submission Form and Employer Questionnaire) is obliged to send the combined pdf version to the e-mail address **endstajatoIye@gmail.com**. The "subject" part of the e-mail to be sent should be " Endüstri Mühendisliđi Bölümü, Student No, Name Surname, Atölye Stajı " (For example: Endüstri Mühendisliđi Bölümü, 13061004, Ebru Geçici, Atölye Stajı). The reports of the students whose documents are missing will be corrected.
- Students must compose the technical drawings of the workpieces they are working on through technical drawing softwares (e.g., Autocad, Solidworks, etc.). Students must also send the soft copies (e.g., dwg files) to the e-mail address **endstajatoIye@gmail.com** together with the internship report in the format of the relevant design program (For example: dwg). If commission members think that the student did not draw him/herself, he/she might be requested to draw again under the inspection of commission members.
- Technical drawings and other documents obtained from the company must not be **pasted** on the pages of the internship report. Instead, they should be given as appendices in a separate file.
- Soft versions of technical drawings must be supplied with student ID, name and surname.
- Students can download technical drawing softwares through <http://distr0.cc.yildiz.edu.tr/> by using their USIS usernames and passwords.
- **If it is determined that the written report is partially or completely copied from another internship notebook, the student's internship is rejected.**
- **If the authorized engineer's name, surname, professional title, registration number in the relevant Professional Chamber or diploma number (together with the university he/she graduated from) are not specified, the internship of the student is rejected.**
- **Before the internship starts, the student must confirm with the firm whether the required documents (technical drawings, sketches, etc.) for the writing of the report can be obtained by approving Workshop**

**Internship Introduction Form. The student is responsible for any problems that may arise from the company not sharing the required documents.**

- **It is not possible to accept the internships without the technical drawing application.**
- **There must be at least three different production methods in the company and at least one of these methods must be a machining method. Internships of students working in companies that do not meet this requirement are rejected.**

## Appendix 1



# Appendix 2

