

**ANKARA YILDIRIM BEYAZIT UNIVERSITY**  
**FACULTY OF ENGINEERING AND NATURAL SCIENCES**  
**DEPARTMENT OF MECHANICAL ENGINEERING**  
**UNDERGRADUATE INTERNSHIP DIRECTIVE**

## **1. Internship Sections and Durations**

- The compulsory internship consists of two different parts which total to forty (40) weekdays; a *Workshop-Manufacturing Internship* (MCE-300) for twenty (20) weekdays, and a *Business-Organisation and Engineering Practices Internship* (MCE-400) for twenty (20) weekdays.
- *Workshop-Manufacturing Internship* can be done from the 4<sup>th</sup> semester on (3<sup>rd</sup> semester for irregular students), and *Business-Organisation and Engineering Applications Internship* from the 6<sup>th</sup> semester on (5<sup>th</sup> semester for irregular students).
- *Workshop-Manufacturing* and *Business-Organisation and Engineering Practices* internships can be done in the same semester starting from the 6<sup>th</sup> semester, but they cannot overlap. In this case, a separate report is prepared for each internship.
- Even if the company works on weekends, Saturday-Sunday days are not counted as weekdays (i.e. these days are not counted towards the compulsory 20 days).
- Public holidays are not counted towards the 20 business days.
- Internships must be done on dates other than the academic calendar.
- The internship period can not overlap with the course or final exam periods.
- In addition, it should not coincide with the summer school period for students who will attend summer school.

## **2. Qualities of the Internship Company/Factory**

### **Workshop-Manufacturing Internship:**

It is obligatory to have at least *1 Mechanical Engineer* in the company where the student will do his/her internship. The following are the manufacturing methods expected to be practised in the company;

1. **Machining Methods:** Turning, milling, planing, forming, broaching, grinding, drilling etc. As a minimum, turning and milling applications are mandatory.
2. **Other Manufacturing Methods:** In addition to the Machining Methods, **at least one** of the following methods is expected to be applied.
  - **Welding methods:** Gas Melt Welding, Electric Resistance Welding, Electric Arc Welding etc.
  - **Casting methods:** Sand Die Casting, Metal Die Casting, Centrifugal Casting, Pressure Casting etc.
  - **Chipless manufacturing methods:** Forging-Compression (free or in mold), Extrusion, Rolling, Wire Drawing, Sheet Forming, Pipe Manufacturing etc.
  - **Plastic manufacturing techniques:** Plastic Injection, Plastic Extrusion, Thermoforming etc.

### **Business-Organisation and Engineering Practices Internship:**

This internship should be done in a corporate company that employs at least **10 workers** and **more than one engineer**. Besides the general engineering activities, the company should have other departments such as human resources, accounting, purchasing, marketing, R & D, design and planning, quality control, storage etc.

This internship can be done at a company that functions in one of the subjects listed below:

- A factory that carries out Manufacturing Operations related to mechanical engineering
- Power plants
- R&D Design organization
- A laboratory related to the machinery manufacturing sector
- Production sites that are not directly related to the machinery industry (refineries, cement factories, sugar factories, dairy factories, textile factories, factories producing construction materials, etc.)

**Note:** The student may be allowed to do an internship in another institution other than the above-mentioned institutions with the discretion of the internship commission.

### **3. General Principles to be Followed in Preparation of the Internship Report**

- A separate internship report should be prepared for each internship.
- Internship reports should be written in a word processing software, using a technical language, legibly and carefully, avoiding unnecessary details and repetitions, only by dealing with technical issues. Internship reports prepared in the form of copying from another source will not be accepted.
- If more than one student is doing their internships at the same company during the same period, internship reports shouldn't be the same. If this situation is noticed, the internships of these students will be deemed invalid.
- The internship report should start with a technical examination of the company. Information such as factory layout, number of employees, fields of activity, etc. should be included in the internship report.
- The machine layout plan of the internship area should also be drawn.
- If necessary, brief theoretical information about the work done should be given, followed by a detailed practical explanation.
- Ready-made information, computer-printed figures and photocopies should be avoided as much as possible in the preparation of the report.
- If the drawings will be included in the report, the drawings (technical drawings and/or operation drawings) must be generated by the student using computer software or manually. The technical drawings taken directly from the internship company and included in the internship reports are returned to the students for correction.
- Informative documents given by the company should not be included in the report. Students are expected to transfer their own experiences and observations to their internship reports using their own sentences.
- In the internship report, it is expected that the student will include details only about the studies which s/he personally participated in and the processes s/he observed.

## **4. Internship Contents**

### **4.1 Workshop-Manufacturing Internship**

This internship will be done for the purpose of gaining practical knowledge on the production and assembly of a product, the structure and maintenance of the workshop where the product is produced. The internship is 20 business days.

#### **Workshop-Manufacturing Internship Report Contents:**

- The technical drawing of the part whose production is inspected should be drawn by hand or using a CAD software according to the engineering principles and included in the internship report by printing it out.
- The name, usage place, function and material of the part manufacture of which is examined should be specified.
- The manufacturing of the examined part should be explained step by step from the preparation to the final stage. Manufacturing and process drawings should also be given as much as permitted by the company.
- The name, function and technical capacity of all kinds of machines and tools used in the examined manufacturing stages should also be specified.
- Measurement methods, quality control techniques, repairing and maintenance applications, if any, should be examined and noted.
- Heat treatment applications and advanced engineering applications, if any, should be followed and recorded in the report.
- Occupational health and safety activities and safety-related measures in the company should also be noted.
- At the end of the internship, a general view and evaluation of the work done should be included.

If the internship company has the following applications, in addition to the ones written above, other details that should be in the internship report are as follows:

#### **Machining Related Parts:**

- Tooling and work clamping methods.
- Machining drawings, selection of process parameters and machine settings.
- All ancillary processes and tools used.

**Welded Related Parts:**

- The welding methods and welding additives.
- The types of used welding and the preparation methods.
- The welding current value, speed, etc. investigation on the selection of process parameters, representation of welding seams with symbols.
- Investigation of rivets, soldering and bonding, if any, from other joining techniques.

**Chipless (Plastic) Forming Related Parts:**

- Determination of parameters such as applied force, speed, friction, and lubrication.
- Explanation of methods such as sheet metal cutting, deep drawing, bending, stretching, plastering, ironing etc.
- Schematic representation of the attachment of the moulds to the machines and the parts to the moulds.

**Casting Related Parts:**

- Detailed examination of moulding techniques and examination of the mould, cores and models used for the part being examined, and technical drawing of the mould.
- Step-by-step explanation of the casting process.
- Detailed information about the melting furnace and melting process, if any.

**Outcomes of Workshop-Manufacturing Internship:**

Experiencing how chip removal is done in machine tools such as lathe, mill, drill, planer, and grinder. Understanding the fundamentals of plastic forming processes such as cutting, bending, deep drawing, forging, rolling and extrusion. Recognizing dimension and tolerance measuring tools and learning to use them. Recognizing numerically controlled machine tools, and gaining information about their programming. Gaining experience in various welding methods such as gas fusion welding, electric arc welding, gas and submerged arc welding. Learning how heat treatments are done practically. Learning casting methods, model and core preparation, moulding, and melting processes. Having minimum knowledge about materials.

**4.2 Business-Organization and Engineering Practices Internship**

The purpose of this internship, which will be done after the first internship (MCE-300) is completed, is to enable the student to see the application of the courses taught in the Department of Mechanical Engineering and to gain experience on this subject. In this

internship, students are expected to gain experience in production lines, assembly, storage, quality control, marketing, business preparation, management and organization, document preparation, filing, product development, design, planning, project and maintenance. The student performs this internship by working 20 (twenty) business days in an area of his/her interest.

**Business-Organization and Engineering Practices Internship Report Content:**

- Company's introduction, number of employees, factory location, physical structure of buildings, production capacity, daily and annual production amounts in the past.
- Organization chart, units within the firm and their duties. Notable shortcomings in this context.
- Lists and tasks of all machines, repair and maintenance of the workshops, raw material warehouses.
- Examining all kinds of processes in the business, a process chart that includes the stages that the product goes through from the raw material state to the final state.
- By-products and processes used.
- Detailed examination of the used materials and the processes performed for each process.
- Working methods, analysis and testing procedures of the design department, if any.
- Energy facilities of the company, compressors, heaters, evaporators, coolers, etc.
- Detailed examination of the production line, if any.
- Inspection of raw material and energy supplies.
- R&D studies within the scope of the company's permission.
- Reviewing quality control organization and quality control techniques.
- Workflow and time study charts.
- Purchasing organization, warehouse and material organization, vehicles.
- Human resources departments, dispute resolution, social security studies, human relations within the company.
- Marketing, purchasing transactions, supply-demand balance, cost control, accounting, if any.
- Foreign import-export transactions, if any.
- Efforts to increase quality and productivity, risk analysis.
- Examining the certification systems and processes such as TSE, ISO, CE in the company.

## **5. Evaluation of the Internship**

**The student must submit the internship report to the internship commission within 2 (two) weeks at the latest after the new academic year starts.** After the internship documents are submitted to the internship commission at the end of the internship, the faculty members/staff determined by the Department Head with the recommendation of the Department Internship Commission, examine and evaluate the internship documents sent to them by the Department Internship Committee within the framework of the relevant Department Internship Directive. The Departmental Internship Committee, when deemed necessary, may invite students for an interview regarding their internship studies.

Internship evaluation forms and internship reports of the intern students are examined by the relevant faculty members/staff and then, the internship of the students are evaluated as **successful, review and resubmit, or fail**. Preliminary evaluation results are announced on the website of our department. Students who are given corrections must make the necessary corrections and resubmit their internship reports again within 1 month. The internship of those who do not submit their internship reports within this period will be deemed unsuccessful. Internships that are considered unsuccessful must be repeated.

If the student wishes to object to the internship result, s/he applies to the Internship Committee with a petition within 15 days after the announcement of the results. The internship evaluation of the student, whose objection is deemed appropriate, is made again. Then the final results are announced on the department web page. Subsequent objections are not accepted.

## **6. Matters That Students Should Consider During Summer Internship**

- The internship application documents must be filled in completely and submitted to the Department Internship Committee at the latest 15 days before the starting of the internship. It is the responsibility of our students to submit the documents on time. If the specified date is passed, the legally required health insurance procedures for the internship will not be initiated.
- Internship application forms should be prepared in Turkish **with 2 copies** to be given to the school. If the company requests an internship application document, an extra

form must be filled out. The path to be followed by the student during the internship application is as follows:

- After the document is delivered, the insurance procedures will be done by the university and the students who do not have an SGK number will be given an SGK number. Our students, who have done internships or worked before, should also write their SGK numbers on their internship forms. Students who start their internship earlier should inform the engineering faculty secretariat about their status. The same procedures must be done for students who are currently insured. The above-mentioned procedures will not be done regarding the insurance of the students who will do their internship abroad by their means.
- The internship report will be written in English. If there is a problem regarding the approval of the foreign language by the company, the student will prepare the internship report in Turkish and have it approved by the company, and submit the internship reports prepared in both foreign language and Turkish to the Department Internship Committee.
- Students who have done their internship abroad are required to submit a certified translation of their internship report in cases where their internship reports are written in a language other than English.
- The internship book is the notebook in which the student will report all his activities related to his internship and which has an annexe when necessary. A template can be downloaded from the department web page. The first page contains information about the internship, and the following pages include "history" and "daily work".
- Each page has a page number. After the internship book is filled, each page must be separately stamped and approved by the authorized engineer at the company. The diploma number of the responsible engineer or the member number of the Professional Chamber must be in the relevant section of the internship report. In case of any deficiencies in the specified conditions, the Internship Commission may cancel the internship without making any corrections.
- Students must first have the internship application form signed by an internship commission officer, then by the company representative they have agreed with for the internship, and finally, send it back to the authorized research assistants. Before having the internship application form signed by the commission officials, students should fill

in their personal and company information completely and add their photos to the relevant space.