Course Syllabus

Subject: Basics of Engineering Drawing	**Course Code:** BTEGAE2BNF	**Types of Classes With Hours (weekly):** Lectures Practice Lab. 1 3 0
ECTS: 5		
Classification: Compulsory core material	**Language:** English	**Educational Character:** Lectures Practice Lab. 25% 75% 0%
Assessment Method: Midterm grade		

Assessment and Evaluation Procedures

- Attendance at sessions
- Completion of in-class assignments during practice
- Completion of seven homework assignments
- Writing two midterm exams

Requirements for obtaining the midterm grade:

- Attendance at sessions is mandatory. In case of unjustified absence exceeding one-third of the total class hours, the semester is considered invalid (Blocked).
- During the practice, completing the in-class assignments is mandatory. The in-class assignment can be rated as "acceptable" or "not acceptable." If the acceptance level of the in-class assignments falls below 50%, the semester is invalid (Blocked). The in-class assignments cannot be corrected or made up after the practice.
- Homework assignments offer scoring opportunities, where students can earn a minimum of 3 and a maximum of 5 points for each homework (for the 7th homework a minimum of 6 and a maximum of 10 points) accepted by the instructor. This totals a minimum of 24 and a maximum of 40 points (One of the requirements for the midterm grade is the successful submission of all homework assignments).
- Completion of homework assignments and submission by the deadline set by the instructor:
    - Late submissions incur a penalty fee.
    - Homework assignments not meeting acceptable standards will be returned for revision by the instructor only once. If the revisions are not completed by the deadline specified by the instructor, these assignments will be considered not submitted, resulting in invalid semester (Blocked).
- Midterm exams: The exams provide scoring opportunities, with students able to earn 30 points each (total of 60 points). Only students with justified absence can make up missed exams during the last week of the semester. The combined minimum score of 26 points must be achieved in both exams. Students who fail to meet this requirement can attempt to reach the 26-point threshold once during the first 10 days of the exam period by

taking a makeup exam. In this case, students will write a comprehensive makeup exam covering both topics, and successful completion will earn them 26 points.

Method of determining the midterm grade: The midterm grade is determined based on total points, with up to 49 points considered insufficient, 50-65 points sufficient, 66-80 points average, 81-90 points good, and 91-100 points excellent.

Curriculum Location:	**Preconditions:**
2nd semester	-

Week 1

Lecture:

- Introduction (The importance and interpretation of the engineering design and drafting process. The relationship between classical/manual drafting and computer-aided design (CAD)). Standards. Drawing sheets. Line types. General analysis and interpretation of real technical documentation.

Practice:

- Manual drawing tools. Basic planar constructions.
- **Assignment of 1st homework:** Drawing lines freehand and with a ruler/compass. Basic planar constructions.

Week 2

Lecture:

- Technical writing. Coordinate systems. Theory of projection and projection methods. Representation using orthogonal views. Basic views. Selection and placement of basic views. Use of lines.

Practice:

- Derivation of basic views freehand based on an axonometric drawing or a real component.
- **Assignment of 2nd homework:** Writing standard letters freehand. Constructing the given basic views based on an axonometric drawing.
- **Homework 1 submission and defense.**

Week 3

Lecture:

- Derivation of new basic views from existing ones. Isometric representation based on existing views.

Practice:

- Derivation of a new basic view based on two given views. Freehand drawing of an isometric model based on given views.
- **Assignment of 3rd homework:** Constructing a third view based on two basic views. Constructing an isometric model based on given views.
- **Assignment 2 submission and defense.**

Week 4

Lecture:

- Representation of general and special-position lines and planes in orthogonal projection pairs. Changing projection planes. True dimensions of lines and planes. Derivation of auxiliary views.

Practice:

- Construction of auxiliary views based on two basic views.
- **Assignment of 4th homework:** Construction of auxiliary views based on two basic views.
- **Assignment 3 submission and defense.**

Week 5

Lecture:

- Sections (full section, half view-half section, stepped section, revolved section), cutouts, and details.

Practice:

- **Midterm Exam 1:** Derivation and drawing of basic views based on an axonometric drawing. Constructing a third view based on two given views, as well as auxiliary views. Freehand drawing of an isometric model based on given views.
- **Assignment 4 submission and defense.**

Week 6

Lecture:

- Dimensioning. Selection and placement of dimensions.

Practice:

- Construction of sections, cutouts, and details based on given views. Dimensioning.
- **Assignment of 5th homework:** Construction of designated sections based on given views. Dimensioning.

Week 7

Lecture:

- Surface roughness. Dimensional tolerances (general tolerances, toleranced dimensions).

Practice:

- Freehand drawing of the appropriate number of views and sections, dimensioning, and marking surface roughness based on an axonometric model or a real component.

- **Assignment 5 submission and defense.**

Week 8

Lecture:

- Fits. Geometric tolerances (shape tolerances).

Practice:

- Freehand drawing of the appropriate number of views and sections, dimensioning, and marking dimensional and geometric tolerances based on an axonometric model or a real component with given instructions.

Week 9

Lecture:

- Geometric tolerances (directional and positional tolerances). Part drawings.

Practice:

- Freehand drawing of a part drawing sketch based on an axonometric model or a real component with given instructions.
- **Assignment 6th homework:** Part drawing construction based on an axonometric model of a shaft and given instructions.

Week 10

Lecture:

- Simplified representation of standardized elements. Assembly drawings.

Practice:

- Construction of screw connections. Freehand drawing of part and assembly drawing sketches based on an axonometric model of a simple product or a real product and the necessary descriptions.
- **Assignment 7th homework:** Construction of part and assembly drawings based on an axonometric model of a simple product and the necessary descriptions.
- **Assignment 6 submission and defense.**

Week 11

Lecture:

- Welding symbols. Standard numbers. Dimension chains.

Practice:

- Welding symbols. Dimension chains.

Week 12

Lecture:

- Detailed analysis and interpretation of a simpler real technical documentation.

Practice:

- **Midterm Exam 2:** Correction of an incomplete or faulty technical documentation of a simpler product.
- **Assignment 7 submission and defense.**

Week 13

Lecture:

- Detailed analysis and interpretation of more complex real technical documentation. Review.

Practice:

- Defense of revised assignments. Submission of completed documentation (assignments). Make-up exams for students with justified absences.

Week 14

Lecture:

- Semester closure.

Practice:

- Semester closure.

Literature

Giesecke, Frederick., Mitchell, Alva., Spencer, Henry., Hill, Ivan., Dygdon, John., Novak, James., Loving, R.., Lockhart, Shawna., Johnson, Cindy. Technical Drawing with Engineering Graphics. United Kingdom: Pearson Education, 2016.

Giesecke, Frederick E.. Technical Drawing with Engineering Graphics. United Kingdom: Prentice Hall, 2012.

Horváth, S. Kósa, Cs-né.: Műszaki kommunikáció. ÓE jegyzet, 2014

Kovács, G-né., Kovács, M.: Műszaki ábrázolás, 2013 (ISBN 978-963-7175-99-2
Fenyvesi T.: Műszaki táblázatok, NSZFI, 2008.
Bartha, M., Bándy, A., Cseke, J., Klementis, Cs., Nyitrai, J., Nyolcas, M., Török, I.: Műszaki ábrázolás I., 2012 (ISBN 978-963-279-637-6

Acquirable Professional Competencies

1. Has a comprehensive understanding of the basic facts, directions, and boundaries of the technical field.
2. Understands the general and specific mathematical, natural, and social science principles, rules, relationships, and procedures necessary for practicing the technical field.
3. Familiar with the conceptual framework, key relationships, and theories related to the field.
4. Has a comprehensive understanding of the knowledge acquisition and problem-solving methods of the main theories in the field.
5. Can perform basic analysis of the disciplines constituting the knowledge system of the technical field, formulate synthetic statements of relationships, and engage in adequate evaluative activities.
6. Can apply the most important terminology, theories, and procedures of the given technical field in the execution of tasks related to them.
7. Capable of planning, organizing, and carrying out independent learning.
8. Capable of identifying routine professional problems, exploring the theoretical and practical background necessary for their solution, formulating and solving them (using practical applications of standard operations).
9. Capable of understanding and using the characteristic literature, computational, and library sources of their field.

Name and Designation of the Course Responsible: Fürstner Igor Associate Professor	**Role:** Teacher	**Organizational Unit:** Donát Bánki Faculty of Mechanical and Safety Engineering Institute for Natural Sciences and Basic Subjects
Name and Designation of the Course Teacher: Fürstner Igor Associate Professor	**Role:** Teacher	**Organizational Unit:** Donát Bánki Faculty of Mechanical and Safety Engineering Institute for Natural Sciences and Basic Subjects