Descriptive Geometry and Technical Drawing (Year I, Semester I)

Credit value (ECTS) 5

Course category
Fundamental discipline (compulsory)

Discipline Code: A.EMIAIA.F.104

Course holder:
PhD. Assoc. Prof. Roxana Dana BUCUR

Discipline objectives (course and practical activities)

The aim of the course is to provide students with the knowledge and skills necessary for water management in agriculture and the rational use of land resources. The course also explores methods for protecting and improving land affected by soil erosion and landslides. Traditional technical options for water storage and flood protection are analyzed from both a technical and economic perspective. General concepts of hydraulics and hydrology are introduced to help students understand issues specific to land reclamation works.

During practical sessions, students will learn how to design land use categories for agricultural purposes, as well as local irrigation systems, drainage systems, and measures for soil erosion control.

Contents (syllabus)

Course (chapters/subchapters)
Introductory notions: The object and importance of descriptive geometry and technical drawing; Projection systems. Terminology and graphical conventions.
Orthogonal projections: Principles of projections on two perpendicular planes; Representation of points, lines, and planes.
Relative position of geometric elements: Parallels, perpendiculars, concurrent elements, and particular positions; Determination of traces of a line and a plane.
Intersection of geometric elements: Intersection between lines and planes; Determination of intersection points and lines.
Plane sections of geometric solids: Determination of sections in prisms, pyramids, cylinders, cones, etc.; Application in technical drawing.
Development of surfaces: Methods for unfolding plane and curved surfaces; Applied examples on solids used in construction and mechanics.
Representation of parts and assemblies: Views, sections, and details; Rules for execution and assembly drawings.
Technical drawing – norms and conventions: General representation standards (ISO, SR EN); Types of lines, dimensions, scales, and technical lettering.

Practical activities
Familiarization with drawing instruments and materials; general tracing rules, technical lettering, formats, and title blocks.
Projection systems and graphical conventions; projection of a point on two perpendicular planes.
Representation of the line – traces, particular positions, intersection with projection planes.

Representation of the plane – traces, particular positions, lines and points belonging to the plane.
Relative position between lines and planes; determination of intersections.
between two planes; applications in descriptive geometry.
Plane sections of geometric solids (prisms, pyramids).
Plane sections of round solids (cylinders, cones).
Development of plane surfaces (prisms, pyramids).
Development of curved surfaces (cylinder, cone).
Technical drawing standards; line types, dimensioning, scales.
Views and sections in technical drawing; rules for execution drawings.
Introduction to computer-aided design (CAD) – basic 2D commands.
Final project – execution of assembly and detail drawings based on a technical theme.

References

1. Drăgan, D.; Bărbînță, D. (2018). *Descriptive Geometry (5th edition, revised and updated)(in Romanian)* Cluj-Napoca: U.T. Press.
2. Gheorghe, Constantin; Butu, Mihai; Butu, Larisa. (2015). Development of Technical Part Surfaces. Graphic Constructions, Relations and Useful Tables. *(in Romanian)* București: AGIR Publishing House (ISBN 978-973-720-602-2).
3. Belea, Gh. (2011). *Descriptive Geometry*. *(in Romanian)* Timișoara: Politehnica Publishing House (ISBN 978-606-554-335-5).
4. Mihai, Geanina; Stănescu, Mădălina; Roșu, Lucica. (2011). Desen tehnic și topografic: curs pentru uzul studenților. *(in Romanian)* București: Matrix Rom Publishing House.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Oral examination	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

Contact

PhD. Assoc. Prof. Roxana Dana BUCUR
Faculty of Animal Resources and Food Engineering - USV Iaşi
8 Mihail Sadoveanu Alley, Iaşi, 700490, Romania
telefon: 0040 232 407583, fax: 0040 232 267504
E-mail: roxana.bucur@iuls.ro