COURSE NAME

Name: **GRAPHIC EXPRESSION I**

Code: 101123

Curriculum: **DEGREE IN CIVIL ENGINEERING**   Year: 1

Name of the module to which it belongs: BASIC TRAINING MODULE

Subject: GRAPHIC EXPRESSION I

Nature: BASIC   Duration: FIRST SEMESTER

ECTS Credits: 6   Classroom hours: 60

Face-to-face classroom percentage: 40%   Non-contact hours: 90

Online platform: http://moodle.uco.es/m1718/

FACULTY DETAILS

Name: ESQUINAS GARCÍA, JUAN (Coordinator) Centre: EPS BELMEZ

Department: GRAPHIC AND GEOMATIC ENGINEERING area: GRAPHIC EXPRESSION IN ENGINEERING

Location of the office: DRAWING CLASS

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SKILLS

CB1	Have and understand specific knowledge of the study area of the Degree that gives skills for the exercise of the profession of Civil Engineering.
CB3	Be able to apply the knowledge acquired to their work or vocation in a professional manner. Prepare and defend arguments in the relevant knowledge area.
CB5	Gather and analyse relevant data within the study area of Civil Engineering, in order to issue judgements that include a reflection on relevant topics of a social, scientific or ethical nature.
CU2	Know and refine the user level of ITs.
CEB2	Spatial vision skills, and knowledge of the graphic representation techniques, both by traditional methods of metric geometry and descriptive geometry, and by means of computer-assisted design applications.

OBJECTIVES

The course Graphical Expression is aimed at achieving the following General Goals:

Scientific-technical training for the exercise of the profession, and knowledge of consultancy, analysis, design, calculation, project, construction, maintenance, conservation and use functions.

Ability to project, inspect and manage works, within their relevant areas.

Ability to perform land planning studies and other studies regarding the environmental aspects related to infrastructure, within their relevant areas.

CONTENTS:

1. Theoretical contents

BLOCK 1.- MULTIVIEW PROJECTION

General aspects, Point, Straight Line and Plane.

System Elements. Representation of Point and Straight Line. Belonging conditions between point and straight line. Singular points. Particular positions of straight lines. Visibility.

Determination of a plane and representation thereof. Belonging conditions between point, straight line and plane. Notable straight lines of planes. Plane positions. Situation of items in the plane. Finding plane's traces.

Parallelism and Perpendicularity.

Theorems. Parallelism between straight, flat, between straight and flat.
Theorems. Perpendicularity between straight and flat, between planes and between two skew lines

Lowering.

Application of affinity to lowering

Rotations.

Rotation of a point, a straight and flat. Rotating a plane at favorable positions.

Change of planes.

Changes projection planes. Change horizontal and vertical plane. New projections of a point changes of planes. Changes in the line. Transformation of oblique plane.

Distances.

Distances between two points, a point to a line, between two parallel planes, between parallel lines of a point to a plane. True extent of a segment.

Angles.
A straight angle with the planes of projection. Straight angle and any plane. Angle of two planes. Angle of any plane with those of projection.
Inverse problems angles. Cone properties revolution in solving problems angles.

Polyhedra: Tetrahedron. Hexahedron.

Definitions. Geometric characteristics Determinants, relationship between them and main section. Obtaining the determining elements. Positions types. Arbitrary and particular sections. Developments

Prisms. Pyramids. Cylinders. Cones.

Prism and Pyramid: Projections. Intersection with a line. Flat section by a generic plane. Abatement of the section and development.
Cylinder and Cone: Projections. Intersection with a line. Flat section by a generic plane. Developments

BLOCK 2.- AXONOMETRIC SYSTEM.

Fundamentals Isometric, dimmetric and trimetric systems. Isometric scale Graduation of the axes. Perspective of the circumference.

BLOCK 3.- NORMALISATION.

European and American representation system. Main and auxiliary views. Sketch Cuts, Sections and Breaks.

2. Practical contents.

Cad systems applicable to problem solving will be explained on a cross-cutting basis.