

|                           |  |
|---------------------------|--|
| <b>City Center Campus</b> | School of Industrial Engineering and Design  |
| <b>Program</b>            | 56IE – Bachelor of Science in Electrical Engineering<br>56IA – Bachelor of Science in Industrial Electronics Engineering and Automation<br>56IM Bachelor of Science in Mechanical Engineering<br>56IQ - Bachelor of Science in Chemical Engineering<br>56DD - Bachelor of Science in Industrial Design and Product Development Engineering |

| <b>Course number and name</b> |  |
|-------------------------------|--|
| <b>Number</b>                 | 565002081, 565001081, 565003081, 565004081,565005081 |
| <b>Name</b>                   | Drawing and sketching                                |
| <b>Semester</b>               | S8 [(February-June)]                                 |

| <b>Credits and contact hours</b> |    |
|----------------------------------|----|
| <b>ECTS Credits</b>              | 3  |
| <b>Contact hours</b>             | 30 |

|                           |  |
|---------------------------|--|
| <b>Coordinator's name</b> | Diaz-Obregon Cruzado, Raul [raul.diazobregon@upm.es] |
|---------------------------|--|

| <b>Specific course information</b>   |   |
|--|---|
| <b>Description of course content</b>   |   |
| In this course we will set the foundations of freehand drawing and representation. It is an introduction to the tools and fine arts materials applied to the industrial design. Colour analysis and management guidelines will be given as well as elementary patterns of sketching. |   |
| <b>List of topics to be covered</b>  |   |
| 1. Introduction to creative processes and materials.<br>2. Drawing basics<br>2.1. Composition<br>2.2. Perspective: one and two points perspective.<br>2.3. Value<br>3. Colour and sketching<br>4. Creative application tools   |   |
| <b>Prerequisites or co-requisites</b>  |   |
| None.  |   |
| <b>Course category in the program</b>  |   |
| <input type="checkbox"/> R (required)  | <input checked="" type="checkbox"/> E (elective)<br><i>(elective courses may not be offered every year)</i> |

### Specific goals for the course

#### Specific outcomes of instruction

- RA34 - Be capable of graphico-analytical expression applied to problem solving.
- RA31 - Be able to compositions with the right proportions.
- RA33 - Be able to use colour in artistic drawing.
- RA32 - Have developed skills of perception and analysis of shape and matter.

### Bibliography and supplemental materials

- Arnheim, Rudolf (1954): Art and Visual Perception: A Psychology of the Creative Eye, Berkeley, Los Angeles, University of California Press.
- Edwards, Betty (2012): Drawing on the Right Side of the Brain, Penguin Putnam, New York.
- Kandinsky, Wassily (1947): Point and line to plane.  
<https://archive.org/search.php?query=publisher%3A%22New+York+%3A+Solomon+R.+Guggenheim+Foundation%22>
- Smith, Stan (2002): Anatomy, Perspective and Composition for the Artist Chartwell Books
- Slade, R. (2016): Sketching for Engineers and Architects, New York, Routledge.

### Teaching methodology

|                   |                                    |                                 |                              |
|-------------------|------------------------------------|---------------------------------|------------------------------|
| <u>X</u> lectures | <u>  </u> problem solving sessions | <u>  </u> collaborative actions | <u>X</u> laboratory sessions |
| <b>Other:</b>     |                                    |                                 |                              |