220084 - Graphic Expression I

Degree competences to which the subject contributes

Specific:
1. A capacity for spatial vision and an understanding of graphic representation techniques, using the traditional methods of metric and descriptive geometry and computer-aided design applications

Learning objectives of the subject

- To promote the vision and spatial intelligence.
- To know the more usual techniques of graphic representation in the engineering.
- To provide the students the capacity to manipulate and to describe spatial forms through a flat support.
- Enable student to be able to interpret and to conceive the real space of three dimensions.
- To determine in shape and dimensions any piece or real mechanism.
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group:</th>
<th>32h</th>
<th>21.33%</th>
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<tr>
<td></td>
<td>Hours small group:</td>
<td>28h</td>
<td>18.67%</td>
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<tr>
<td></td>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
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## 220084 - Graphic Expression I

### Content

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
<th>Related activities</th>
<th>Learning time</th>
<th>Related activities</th>
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</thead>
</table>
| 1. Fundamentals of Computer Aided Design | | | **Learning time:** 13h | Laboratory classes: 4h  
Self study: 9h |
| 2. Advanced plane geometry and its extension to space | | | **Learning time:** 15h | Theory classes: 3h  
Laboratory classes: 3h  
Self study: 9h |
| 3. Applied descriptive geometry and spatial | | | **Learning time:** 78h | Theory classes: 23h  
Laboratory classes: 8h  
Self study: 47h |

### Related activities:

1,2,3,4,5,6,7,8  
2,7,8,9,10,11  
3,4,5,6,7,8,9,10,11
### 4. Introduction to industrial standards

**Description:**

**Related activities:**
4, 5, 7, 8, 9, 10, 11

**Learning time:** 44h
- Theory classes: 6h
- Laboratory classes: 13h
- Self study: 25h
### Planning of activities

| ACTIVITY 1: CAD 2D BASIC NOTIONS. DRAWING OF SHEET FORMAT (PRACTICES PRESENCIALS) | Hours: 4h  
Laboratory classes: 2h  
Self study: 2h  
Theory classes: 0h |
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<td>Description:</td>
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| ACTIVITY 2: GEOMETRIC SIDES. RESOLUTIONS OF TANGENCIES (PRACTICES PRESENCIALS) | Hours: 4h  
Laboratory classes: 2h  
Self study: 2h |
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<td>Description:</td>
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| ACTIVITY 3: AXONOMETRIC PERSPECTIVE (PRACTICES PRESENCIALS) | Hours: 4h  
Laboratory classes: 2h  
Self study: 2h |
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<tr>
<td>Support materials:</td>
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</tbody>
</table>

| ACTIVITY 4: DIEDRIC SYSTEM. PRINCIPAL AND AUXILIARY NORMALIZED VIEWS (PRACTICES PRESENCIALS) | Hours: 8h  
Laboratory classes: 4h  
Self study: 4h |
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<tr>
<td>Description:</td>
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| ACTIVITY 5: ARCHITECTURAL REPRESENTATION. DIEDRIC VIEWS | Hours: 4h  
Laboratory classes: 2h  
Self study: 2h |
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<tbody>
<tr>
<td>Description:</td>
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### ACTIVITY 6: CAD 3D BASIC NOTIONS. CONSTRUCTION OF REGULAR POLYHEDRONS (PRACTICES PRESENCIALS)

**Hours:** 4h  
Self study: 2h  
Laboratory classes: 2h

### ACTIVITY 7: CONSTRUCTION OF PIECES IN 3D (PRACTICES PRESENCIALS)

**Hours:** 30h  
Self study: 18h  
Laboratory classes: 12h

### ACTIVITY 8: FINAL WORK (INDIVIDUAL ACTIVITY)

**Hours:** 27h  
Laboratory classes: 2h  
Self study: 25h

### ACTIVITY 9: PARTIAL EXAM

**Hours:** 2h  
Theory classes: 2h

### ACTIVITY 10: FINAL EXAM

**Hours:** 2h  
Theory classes: 2h

### ACTIVITY 11: THEORY SESSIONS

**Hours:** 61h  
Self study: 33h  
Theory classes: 28h

### Support materials:
The final qualification is the sum of the following final qualifications:

\[ N_f = 0.2 \times N_{ep^*} + 0.25 \times N_p + 0.2 \times N_t + 0.35 \times N_{ef} \]

- **Nf**: Final qualification
- **Nep^***: Partial examination mark (activity 9)
- **Nef**: Final examination mark (activity 10)
- **Np**: Practise mark (activities 1 to 7)
- **Nt**: Final project qualification (activity 8)

* Although not mandatory, it is planned to recover the grade of the partial when it is less than 5 in the final exam. If the final exam grade is greater than or equal to 5 and the partial exam grade is less than 5, the final grade is:

\[ N_f = 0.2 \times 5 + 0.25 \times N_p + 0.2 \times N_t + 0.35 \times N_{ef} \]

**Regulations for carrying out activities**

- The weekly activities in CAD classrooms (activities 1 to 7) are compulsory. To pass the course a maximum of 2 faults are allowed.
- All activities can be done with help of files.
Bibliography

Basic:


Complementary:


Others resources:

Hyperlink

http://ocw.unican.es/ensenanzas-tecnicas/expresion-grafica-y-dao/

http://ocw.upm.es/expresion-grafica-en-la-ingineria/

http://www.tododibujo.com/