COURSE DESCRIPTION

DECISION SUPPORT SYSTEMS

YEAR 4 SEMESTER 2

BIOMEDICAL ENGINEERING

MODALITY: ON CAMPUS

ACADEMIC YEAR 2019/2020

POLYTECHNIC SCHOOL
1. COURSE/SUBJECT IDENTIFICATION

1.- COURSE/SUBJECT:

Name: Decision support systems  
Code: ibm410  
Year (s) course is taught: 4  
Semester (s) when the course is taught: 2  
Type: Compulsory subject  
ECTS of the course: 4.5  
Hours ECTS: 30  
Language: English  
Modality: On Campus  
Degree (s) in which the course is taught: Biomedical Engineering  
School which the course is taught: Polytechnic School

2.- ORGANIZATION OF THE COURSE:

Department: Information technology  
Area of knowledge: Biomedical engineering

2. LECTURERS OF THE COURSE/SUBJECT

1.-LECTURERS:

<table>
<thead>
<tr>
<th>Lecturer(s)</th>
<th>CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>David González Márquez</td>
</tr>
<tr>
<td>Phone (ext):</td>
<td>913724046 (4946)</td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:david.gonzalezmarquez@ceu.es">david.gonzalezmarquez@ceu.es</a></td>
</tr>
<tr>
<td>Office:</td>
<td>D.2.6.4</td>
</tr>
</tbody>
</table>

2.- TUTORIALS:

For any queries students can contact lecturers by e-mail, phone or visiting their office during the teacher's tutorial times published on the students' Virtual Campus.

Attendance at tutorials implies the student's previous work to try to solve the question/s beforehand. Tutorials will never be used to repeat lectures that have already been explained in the classroom. It is every student responsibility to make catch up with the rest of the class by his/her own means.

Moreover, the professor may propose some tutorials to the students in order to talk about different aspects of the course or to develop whatever activity related to it, even the evaluation ones.

3. COURSE DESCRIPTION

In this course the student will learn to understand, build and evaluate decision support systems in the medical domain. The course includes review and discussion of case studies.
## 4. COMPETENCIES

### 1.- COMPETENCIES

**Code** | **Basic and General Competencies**  
---|---  
BAS-3 | Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética.  
BAS-5 | BAS-5: Que los estudiantes hayan desarrollado aquellas habilidades de aprendizaje necesarias para emprender estudios posteriores con un alto grado de autonomía.  
CG-3 | Capacidad de planificación, gestión del tiempo y automotivación.  
CG-4 | Capacidad de comunicación interpersonal.  
CG-5 | Orientación a la calidad.  
CG-6 | Espíritu emprendedor e innovación.  
CG-8 | Actuar con honradez, veracidad, rigor, justicia, eficiencia y respeto.  

**Code** | **Transversal Competencies**  
---|---  
CT-5 | Capacidad para dominar un idioma extranjero (inglés).  

**Code** | **Specific Competencies**  
---|---  
CE-44 | Conocer y aplicar las técnicas de soporte a la decisión más comunes en el dominio médico.  
CE-45 | Conocer, comprender las implicaciones éticas y legales derivadas del uso de datos de los pacientes en sistemas de soporte a la decisión.  

### 2.- LEARNING OUTCOMES:

**Code** | **Learning outcomes**  
---|---  
RA-1 | Apply, build and evaluate different support systems for the clinical domain.  
RA-2 | Know and understand the legal and ethical issues (privacy, confidentiality and security) related with clinical data.  
RA-3 | Gain an appreciation of the process of implementing clinical information systems.  

### 5. LEARNING ACTIVITIES

#### 1.- DISTRIBUTION OF STUDENTS’ ASSIGNMENT:

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>On-campus hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF-1</td>
<td>Classes (theoretical-practical)</td>
<td>25</td>
</tr>
<tr>
<td>AF-2</td>
<td>Labs</td>
<td>20</td>
</tr>
<tr>
<td>TOTAL Presence Hours</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Total hours of the course</td>
<td></td>
<td>135</td>
</tr>
</tbody>
</table>
2.- DESCRIPTION OF LEARNING ACTIVITIES:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF1 Classes (theoretical-practical)</td>
<td>Learning activity oriented to the competence of acquisition of knowledge, the reasoned interpretation of the theory and the resolution of exercises. This activity gives priority to the transmission of knowledge by the professor, with the previous preparation or later study from the student.</td>
</tr>
<tr>
<td>AF2 Labs</td>
<td>Learning activity oriented preferably to the competence of application of knowledge, in a lab and supervised by the professor, it is representative of subjects with practical activities (labs, radio studies, TV studies and/or any other proper space).</td>
</tr>
<tr>
<td>AF3 Mentoring</td>
<td>Training activity outside the classroom that fosters independent learning, supported the action and guide of a tutor.</td>
</tr>
<tr>
<td>AF6 Self student work</td>
<td>Training activity outside or inside the classroom that fosters independent learning, individual or cooperative</td>
</tr>
</tbody>
</table>

6. ASSESSMENT OF LEARNING

1.- CLASS ATTENDANCE:

Class attendance is recorded on the student portal but is not evaluated. Justifications of absence will not be accepted.

On the other hand, attendance at practice is required to evaluate this part of the subject in the continuous assessment.

2.- ASSESSMENT SYSTEM AND CRITERIA:

The aim of the assessment is to determine if the competencies have been achieved, and at which level. These levels will determine the ordinary examination’s grade. The most important tool to assess the student’s level is a final exam and a project, which cover all the course’s topics. If the minimum level for all learning outcome is not achieved, the student’s grade will be lower than 5 (failed). If the student does not attend to the final exam and/or fails to deliver the project, their final grade will be “not attended”. The final exam will be completed alone, while the projects are made by a group of students, whose size will be decided by the professor.

The project grade depends on the achievement of several objectives that will be explained during the course by the lecturer. This score may include the proper planning of the project and its defence and presentation. In order to maximize the students’ success, it is recommended that they take part the continuous assessment process that includes the theoretical classes, the practical classes, the final projects and the intermediary and final exams.
ORDINARY EXAMINATION (continuous assessment)

<table>
<thead>
<tr>
<th>Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Test</td>
<td>10%*</td>
</tr>
<tr>
<td>Final Test</td>
<td>30%*</td>
</tr>
<tr>
<td>Course Projects</td>
<td>60%*</td>
</tr>
<tr>
<td>Optional activities in class</td>
<td>0-15%**</td>
</tr>
</tbody>
</table>

*To pass the course a mark of at least 4 or more is required both in projects and exams. Also, the total without the optional activities should be equal or higher than 5.

**Optionally the student could obtain up to an additional 15%, but to add these additional points the grade, with the other elements, must be equal or greater than 5.

RE-TAKE EXAM/EXTRAORDINARY EXAMINATION

<table>
<thead>
<tr>
<th>Name</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Definition</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE-1 Written exam</td>
<td>Written exam theoretical-practical, with short, long, exercises or test questions.</td>
<td>30-40%</td>
</tr>
<tr>
<td>SE-2 Exposition of practical work</td>
<td>Exposition of practical work, can be written, oral or using the computer or any equipment.</td>
<td>10-20%</td>
</tr>
<tr>
<td>SE-3 Portfolio</td>
<td>Group of practical exercises (digital or physical) result of the practical work of the student.</td>
<td>40-60%</td>
</tr>
</tbody>
</table>

7. COURSE PROGRAMME

1.- COURSE PROGRAMME:

- Introduction to decision support systems
- Decision making
- Decision support systems architecture
- Expert systems and rule-based systems
- Tools to build decision support systems
- Case studies
8. RECOMMENDED READING

1.- ESSENTIAL BIBLIOGRAPHY:


2.- ADDITIONAL BIBLIOGRAPHY:


3.- WEB RESOURCES:

- Virtual Campus

9. ATTITUDE IN THE CLASSROOM

1.- REGULATIONS

Any irregular act of academic integrity (no reference to cited sources, plagiarism of work or inappropriate use of prohibited information during examinations) or signing the attendance sheet for fellow students not present in class will result in the student not being eligible for continuous assessment and possibly being penalized according to the University regulations.