240NU023 - Project II

Coordinating unit: 240 - ETSEIB - Barcelona School of Industrial Engineering
Teaching unit: 748 - FIS - Department of Physics
Academic year: 2017
Degree: MASTER’S DEGREE IN NUCLEAR ENGINEERING (Syllabus 2012). (Teaching unit Compulsory)
ECTS credits: 3
Teaching languages: English

Teaching staff

Coordinator: FRANCESC-JOSEP REVENTOS PUIGJANER

Degree competences to which the subject contributes

Specific:
1. Ability to select the most appropriate components and materials for the nuclear island systems of a plant as well as to analyze its degradation as a result of the conditions (thermal, chemical, mechanical and radiation) to which they are subjected.
2. Ability to write the main systems of a nuclear power plant and identify the main features of such systems.
3. Ability to identify the different tasks of the technical and financial management of a nuclear facility and assess the problems associated with analyzing and proposing possible solutions.
4. Knowledge of the diagnostic techniques used in the inspection and life management of nuclear plant components.
5. Have a clear and comprehensive life cycle of facilities, from design to decommissioning of a nuclear plant.
6. Ability to correctly apply the rules of safety and conduct analysis of nuclear plant safety
7. Ability to use effectively, understand the operation and validity ranges, and interpret the results of thermal-hydraulic codes and fluid dynamic calculation.

Teaching methodology

The course on P2 Project is organized in some theory sessions combined with an important amount of documentation and design activities. To perform such activities cooperative learning is the most usual method complemented by some autonomous learning.

Learning objectives of the subject

The course on P2 Project is organized in some theory sessions combined with an important amount of documentation and design activities. To perform such activities cooperative learning is the most usual method complemented by some autonomous learning.
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group:</th>
<th>0h</th>
<th>0.00%</th>
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<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
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<td>Hours small group:</td>
<td>0h</td>
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<td>Guided activities:</td>
<td>27h</td>
<td>36.00%</td>
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<tr>
<td>Self study:</td>
<td>48h</td>
<td>64.00%</td>
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### Content

| 1. Overview | Learning time: 11h  
Theory classes: 1h  
Self study: 10h |
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<tbody>
<tr>
<td><strong>Description</strong>: The selected subject is the Steam Generator. The overview of the subject is presented with the concepts needed to plan the activities.</td>
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<td><strong>Related activities</strong>: Independent learning, reading of related material</td>
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| 2. Phase I | Learning time: 30h  
Theory classes: 10h  
Self study: 20h |
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<tr>
<td><strong>Description</strong>: This block includes: Operation of old steam generators (from the Engineering standpoint), Operation of old steam generators (thermal hydraulics) and Steam generator tube rupture. Each one of these three sessions brings the student to look for and to analyse technical information on the depicted topics. In a Phase I concluding session each group of students will present the advancement of their search and judgements. Technical debates will be encouraged and moderated by the lecturers</td>
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<td><strong>Related activities</strong>: Searching, reading and processing the related material</td>
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| 3. Phase II | Learning time: 36h  
Theory classes: 12h  
Self study: 24h |
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<tr>
<td><strong>Description</strong>: The block includes: Decisions to be made, New steam generators design, Compatibility study, Relicensing the plant, Fuel compatibility and Installing and commissioning new steam generators. Each one of these four sessions brings the student to look for and to analyse technical information on the depicted topics. In a Phase II concluding session each group of students will present the advancement of their search and judgements. Technical debates will be encourage and moderated by the lecturers</td>
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<tr>
<td><strong>Related activities</strong>: Searching, reading and processing the related material</td>
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### Planning of activities

#### 1. PREPARING MATERIALS FOR SYNTHESIS SESSIONS (IN GROUP)

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<thead>
<tr>
<th>Hours: 15h</th>
<th>Self study: 15h</th>
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**Description:**
This activity aims to promote a better understanding of the topics developed in class.

**Support materials:**
Material to be obtained at internet or at the library.

**Descriptions of the assignments due and their relation to the assessment:**
At concluding sessions.

#### Qualification system

FQ = CQ

FQ: Final Qualification

CQ: Class qualification. This qualification is obtained weighting the different activities performed using the proportion of hours of each topic related to the total amount of hours of the course. The mentioned activities (information search, presentations, reports and debates) will be identified as specific assignments (some group assignments and some individual ones).

#### Bibliography