19394 - LSSS - Life-Support Systems in Space

Coordinating unit: 300 - EETAC - Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit: 1022 - UAB - (ANG) pendent
Academic year: 2018
Degree: MASTER'S DEGREE IN AEROSPACE SCIENCE AND TECHNOLOGY (Syllabus 2015). (Teaching unit Optional)
MASTER'S DEGREE IN AEROSPACE SCIENCE AND TECHNOLOGY (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: English

Coordinator: Defined in the course webpage at the EETAC website

Opening hours
Timetable: At the end of the regular lectures days, or by fixing a date by e-mail

Prior skills
The students should have a general knowledge on chemistry, physics and biology, at a basic level.

Requirements
None

Teaching methodology
A series of lectures will present the different existing technologies for Life Support in Space.
The material presented in the lectures will be available as a course material.
The students will prepare a specific topic, to be presented to the rest of the class, in groups of two students

Learning objectives of the subject
To understand the relevance and singularity of Life Support in the context of Human Space Exploration.
To know the different technologies in development for Life Support in Space and how they are tested.
To know what are the main elements to consider when designing a Life Support System

Study load
<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group:</th>
<th>45h</th>
<th>36.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>80h</td>
<td>64.00%</td>
</tr>
</tbody>
</table>
## 19394 - LSSS - Life-Support Systems in Space

<table>
<thead>
<tr>
<th>Content</th>
<th>Learning time: 14h 20m</th>
</tr>
</thead>
</table>
| **Introduction** | Theory classes: 6h  
Self study: 8h 20m |

**Description:**
Introduction

**Related activities:**
Lectures

**Specific objectives:**
Introduction to Life Support Systems, Needs, Exploration Scenarios

<table>
<thead>
<tr>
<th>Physico-chemical technologies for Life Support Systems</th>
<th>Learning time: 32h</th>
</tr>
</thead>
</table>
| **Description:** | Theory classes: 12h  
Self study: 20h |
| Physico-chemical technologies for Life Support Systems | |

**Related activities:**
Lectures

**Specific objectives:**
To present the principles of the main Physico-chemical technologies for Life Support Systems and their integration.  
An special emphasis is given to the systems developed for ISS and their operational data

<table>
<thead>
<tr>
<th>Biological technologies for Life Support Systems</th>
<th>Learning time: 32h</th>
</tr>
</thead>
</table>
| **Description:** | Theory classes: 12h  
Self study: 20h |
| Biological technologies for Life Support Systems | |

**Related activities:**
Lectures  
Visit to the MELiSSA Pilot Plant

**Specific objectives:**
To introduce the principles and characteristics of life support systems based on biological technologies and their development stage  
An special emphasis is given to the MELiSSA project of the European Space Agency
19394 - LSSS - Life-Support Systems in Space

Project Development

**Description:**
Preparation and presentation of a personal project

**Related activities:**
Personal work and oral presentation

**Specific objectives:**
Preparing and presenting a personal project by groups of two students in any of the topics of the Course creating particular interest to them and on which they want to deep in their knowledge
Presenting the performed project to the rest of students

Learning time: 46h 40m
- Theory classes: 4h
- Guided activities: 12h 40m
- Self study: 30h

Qualification system

Defined in the course webpage at the EETAC website

Bibliography