

320191 - ROBAS - Basic Robotics

Coordinating unit: 205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
 Teaching unit: 707 - ESAII - Department of Automatic Control
 Academic year: 2019
 Degree: BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Teaching unit Optional)
 BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Teaching unit Optional)
 BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
 BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Optional)
 BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Teaching unit Optional)
 ECTS credits: 6 Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: Jaume Figueras
 Others: Laureano Tinoco

Learning objectives of the subject

Study load

Total learning time: 150h	Hours large group:	30h	20.00%
	Hours small group:	30h	20.00%
	Self study:	90h	60.00%

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Content

<p>Basic Concepts</p>	<p>Learning time: 6h Theory classes: 2h Self study : 4h</p>
<p>Description: - History of the robotics - Fields of application</p>	
<p>Robots and Manipulators</p>	<p>Learning time: 12h Theory classes: 4h Self study : 8h</p>
<p>Description: content english</p>	
<p>Types of Robots</p>	<p>Learning time: 66h Theory classes: 8h Laboratory classes: 22h Self study : 36h</p>
<p>Description: - Introduction. - industrial Robots: · fundamental characteristics. · Types of Robots. · specific Sensors. - mobile Robots: · terrestrial Robots · fundamental Characteristics. · specific Sensors · air Robots · fundamental Characteristics. · specific Sensors · submarine Robots · fundamental Characteristics. · specific Sensors - Other robots</p>	

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<p>End Effectors</p>	<p>Learning time: 6h Theory classes: 2h Self study : 4h</p>
<p>Description:</p> <ul style="list-style-type: none"> - End effectors: Fundamental characteristics . - Types of End effectors. - End effectors: Specific design. 	
<p>Geometric concepts</p>	<p>Learning time: 15h Theory classes: 5h Self study : 10h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Object position and orientation - Reference frames used by a robotic system. - Introduction to robot kinematics 	
<p>Robot Programming</p>	<p>Learning time: 30h Theory classes: 4h Laboratory classes: 8h Self study : 18h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Introduction to robot programming. - Programming types. - Programming Languages: basic and advanced features. - The robot as a multi task system: <ul style="list-style-type: none"> - Flow control in a robot system programming - Task Control in a robot system programming 	

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<p>Robot Application Fields</p>	<p>Learning time: 12h Theory classes: 4h Self study : 8h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Introduction to the task robotization - Adapting the environment to the robot or adapting the robot to the environment. - Fields of robot application : <ul style="list-style-type: none"> - Service Robotics - Medical Robotics - Industrial Robotics - Robotic in education ... 	
<p>Safety</p>	<p>Learning time: 3h Theory classes: 1h Self study : 2h</p>
<p>Description:</p> <ul style="list-style-type: none"> - Safety and protection elements - Safety regulation in the robotized environments 	

Bibliography

Basic:

Fu, K.S.; González, R.C.; Lee, C.S.G. Robótica: control, detección, visión e inteligencia. Madrid: McGraw-Hill, 1988. ISBN 8476152140.

Others resources:

Audiovisual material

Nom recurs

Resource