



RADAR REMOTE SENSING	
Anno immatricolazione	2018/2019
Anno offerta	2018/2019
Normativa	DM270
SSD	ING-INF/03 (TELECOMUNICAZIONI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	COMPUTER ENGINEERING
Curriculum	Computer Science and Multimedia
Anno di corso	1°
Periodo didattico	Secondo Semestre (06/03/2019 - 14/06/2019)
Crediti	6
Ore	45 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	DELL'ACQUA FABIO (titolare) - 4 CFU BLACKWELL WILLIAM JOSEPH - 2 CFU
Prerequisiti	First-level knowledge of: physics, chemistry, mathematical analysis. Having attended the "Satellite Data Analysis" course helps, but this course is designed so that it can also be taken alone.
Obiettivi formativi	Basic knowledge of data produced by remote sensing and information that can be extracted from them. Capability to evaluate the usefulness of different types of data to solve a given problem of detection, tracking, classification or even more complex ones. Basic skills in processing remotely sensed images through dedicated - and also general - software. Radar remote sensing is emphasized, although not treated exclusively, and industry-related applications are stressed thanks to the tight connection with the Lombardy Aerospace Industry Cluster.
Programma e contenuti	Introduction to remote sensing

	<ul style="list-style-type: none"> <li>• Physical phenomena</li> <li>• Remotely sensed data</li> <li>• Basics of processing</li> </ul> <p>Introduction to radar</p> <ul style="list-style-type: none"> <li>• What is radar</li> <li>• Some history</li> <li>• Types of radar</li> </ul> <p>Radar Basics</p> <ul style="list-style-type: none"> <li>• Coherent Radar</li> <li>• Matched filter</li> <li>• Point spread function</li> <li>• The Doppler effect</li> </ul> <p>Earth Observation radar</p> <ul style="list-style-type: none"> <li>• Features of Earth Observation radars</li> <li>• Synthetic Aperture Radar (SAR)</li> <li>• Statistical and spatial analysis of data</li> <li>• Polarimetric data and decompositions</li> </ul> <p>Radar interferometry</p> <ul style="list-style-type: none"> <li>• Interferometry and interferometric processing</li> <li>• Interferometric coherence</li> <li>• Differential interferometry</li> <li>• Risk-related applications</li> </ul>
<b>Metodi didattici</b>	Classroom lectures.
<b>Testi di riferimento</b>	<p>Mark A. Richards (Editor), James A. Scheer (Editor), William A. Holm (Editor) . Principles of Modern Radar: Basic Principles. Scitech Publishing - Raleigh, NC.</p> <p>Various authors. Land Applications of Radar Remote Sensing. InTech. Edited by Francesco Holecz, Paolo Pasquali, Nada Milisavljevic and Damien Closson, ISBN 978-953-51-1589-2, 318 pages. Chapters published June 11, 2014 under CC BY 3.0 license. DOI: 10.5772/55833</p>
<b>Modalità verifica apprendimento</b>	The exam consists of an oral discussion on at least three different topics in the course, aimed at assessing the candidate's level of knowledge and understanding of the subject.
<b>Altre informazioni</b>	The course is suitable for graduate students of the masters course in computer science as well as for graduate students of the master course in electronics. During the course, various chances for additional insights are offered, among which the courses of the European Space Agency (ESA).
<b>Obiettivi Agenda 2030 per lo sviluppo sostenibile</b>	<a href="#">\$lbl legenda sviluppo sostenibile</a>