

SPACE DOMAIN AWARENESS - GRADUATE CERTIFICATE

Space Domain Awareness (SDA) is the tasking and examination of remote sensing and human factors data to infer or construct an operating picture of the space domain to enable awareness and decision making for continued safe operations. This certificate recognizes focus and specialization in the cross-disciplinary area of SDA. This certificate is sponsored by the Ann and H. J. Smead Department of Aerospace Engineering Sciences (AES) and involves a variety of inter-disciplinary courses in Smead AES, the Department of Computer Science (CSCI), Department of Information Science (INFO), and ATLAS Institute (ATLS). This certificate is the first national or international graduate certificate in SDA, and is intended to help unify the community, develop a common lexicon and understanding of the problem and to train the future highly-skilled practitioners.

Requirements

The standard requirements of this certificate are the completion of fifteen (15) hours of graduate-level coursework (i.e., five 3-credit courses) with grades of B or better in each course. In addition to ASEN 5050/ASEN 5052 and ASEN 5044, each student is free to choose the other three courses from one specialization area as specified below.

Students also pursuing other graduate certificates cannot use the same courses to count for both certificates. Some courses are cross-listed with other departments and/or colleges; for the purposes of this certificate, equivalent cross-listed courses to those specified below are acceptable.

The certificate curriculum has been designed with enough options to provide students with a viable subset of courses for certificate completion, considering prerequisites and fall/spring course offerings.

Code	Title	Credit Hours
Requirements		
ASEN 5044	Statistical Estimation for Dynamical Systems	3
ASEN 5050	Space Flight Dynamics	3
Three (3) courses from one specialization area		
Specialization Areas		
<i>Phenomenology and Sensor Processing</i>		
ASEN 5245	Radar and Remote Sensing	
ASEN 5335	Aerospace Environment	
ASEN 6044	Advanced State Estimation	
ASEN 6050	Space Instrumentation	
ASEN 6084	Optical Multi-Target Tracking	
ASEN 6337	Remote Sensing Data Analysis	
<i>Estimation, Tasking, and Decision Theory</i>		
ASEN 5014	Linear Control Systems	
ASEN 5264	Decision Making under Uncertainty	
ASEN 6044	Advanced State Estimation	
ASEN 6080	Statistical Orbit Determination	
ASEN 6084	Optical Multi-Target Tracking	
<i>Interfaces, Human Factors, and Cognitive Sciences</i>		
ASEN 6216	Human Operation of Aerospace Vehicles	

ATLS 5402	Research Methods in Human-Robot Interaction
or CSCI 5402	Research Methods in Human-Robot Interaction
ATLS 5519	Adv Topics (Human-Robot Interaction)
or CSCI 7000	Current Topics in Computer Science
CSCI 5322	Algorithmic Human-Robot Interaction
CSCI 5839	User-Centered Design and Development 1
CSCI 5849	Input, Interaction, and Accessibility
CSCI 6402	Issues and Methods in Cognitive Science
CSCI 7000	Current Topics in Computer Science (Physical Human-Robot Interaction)
INFO 5602	Information Visualization
INFO 5604	Applied Machine Learning
INFO 5609	User-Centered Design
INFO 5612	Recommender Systems

By special approval from the certificate coordinator, a graduate-level special topics class may be substituted for any one class from a specialization area.