AS.472 (GEOSPATIAL INTELLIGENCE)

Courses

AS.472.600. Introduction to Geospatial Intelligence. 3 Credits.
This course provides an overview of the four disciplines that have merged to create the new discipline of geospatial intelligence and an introduction to the content of the program. The history of imagery analysis and digital cartography, the art of turning observation into insight and communicating those insights to non-experts, the science behind the sensors and platforms, and the mathematics behind imagery collection sampling strategies. The course studies the issues, technologies, and changes over the past 60 years that have developed into geospatial intelligence, and it will introduce the students to the opportunities and challenges of geospatial intelligence as it has shaped intelligence collection, analysis, reporting, and policy decisions. The outcomes of success in this profession have created new industries, and the course will also review the effects of commercial imagery, smallsats, non-governmental collection, and remotely piloted sensors. Students will be introduced to the concepts that will be covered through the remainder of the Master's program through the Capstone exercise.

AS.472.610. Commercial Imagery and the Impact of Small Satellites. 3 Credits.
This course will begin with a brief history of commercial imagery. From there students will learn the fundamentals of various imaging sensor modalities (spectral, thermal, radar, motion imagery, etc.). Next, a historical perspective of collection management will be presented followed by changes to collection management due to technology advances within the commercial imaging industry. The strengths and weaknesses of collection models will be described, and students will learn to apply mathematically defined judgements to assess the value and cost of competitive imagery purchases. These judgments will examine the questions that drive the imagery purchase; the respective kinds of sensors and their applicability to certain questions, and the respective kinds of platforms for these sensors--aircraft, remotely piloted vehicles (drones), and different kinds of satellites, including smallsats (small satellites). The intended outcome would be the students understanding of the fundamentals of commercial imaging satellites and their collection criteria, through the comprehension of existing collection plans; the evaluation of existing collection plans; and the creation and budgeting for new collection plans.

AS.472.611. Analyzing Social Media and Geospatial Information. 3 Credits.
Social media is now present globally in everyday life, and in conflicts. With its reach, social media has also become an increasingly meaningful information source for scholars, advocacy groups, intelligence agencies, and others who are interested in shaping public discourse. This course introduces students to social media as part of present day open source information gathering, and how to plan collection and conduct analysis of information from social media. The course covers the operations security considerations, monitoring real time events, verification of online material, basics of social network analysis, and how to work with imagery sourced from social media, including geolocation of imagery. Automation and the limits of it in different phases of the process, and future developments in social media exploitation will also be discussed. During the course, students will conduct a hands-on investigation using social media data.

AS.472.612. Geospatial Analysis: Communicating with Multiple Audiences. 3 Credits.
The course will cover the art of communicating geospatial intelligence in writing, photographs or images, and mapping. It will address the challenges of communicating technical information and intelligence from satellites, aircraft, and drones, into text, combinations of text, graphics, maps, and data base,. The students will perform their own analysis, and convert their intelligence discoveries into data bases, reporting, analysis, briefings, and video-based presentations.

AS.472.613. Geospatial Law and Ethics. 3 Credits.
As geospatial technology and the power of location becomes more mainstream, lawmakers and policymakers are trying to understand the applicability of existing areas of law, including privacy, intellectual property, liability, national security and licensing. This course will provide geospatial practitioners with an understanding of the legal and ethical issues that will become increasingly important in their careers.

AS.472.800. Capstone in Geospatial Intelligence. 3 Credits.
The Capstone is the culmination of the instruction and the learning in the program. It provides the students an opportunity to demonstrate their applied knowledge of the four disciplines of geospatial intelligence—the history of the profession, the science of the sensors and platforms, the art of analysis and geospatial communication, and the mathematics of collection sampling strategies. In this semester-long experience, the student selects a mentor/advisor, identifies a geospatial issue of interest, defines a collection strategy, an analytic methodology, a reporting strategy, and a written summary product and presentation.

AS.472.803. Capstone Continuation for Geospatial Intelligence.
Noncredit, required for those who have completed all of their coursework and have taken the Capstone course, but have not yet completed the Capstone paper.