SPACE POLICY INSTITUTE ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS GEORGE WASHINGTON UNIVERSITY

IAFF 6158.11 Spring 2021 Tuesday, 5:10 - 7:00 pm Virtual

Issues in U.S. Space Policy: Tools and Scenarios

Professor Scott Pace Office: Suite 403, 1957 E Street NW Telephone: (202) 994-5278 E-mail: space1@gwu.edu

<u>Synopsis</u>

This course will address international space policy issues facing the United States and provides an overview of common tools (e.g., orbital mechanics, cost estimation, regulation) used in space policy making and implementation. The course will address current policy and regulatory issues facing U.S. space programs with regard to dual-use technologies, including export controls, spectrum management, and licensing of commercial remote sensing systems. Conflicts over dual-use technologies, such as space launch, remote sensing, satellite navigation, and communications, will be examined for their implications for a range of national interests. The course will also address strategic choices facing other nations in space activities, including dependence on U.S., European, and Russian space capabilities, developing indigenous space programs, and use of commercial space capabilities.

Active participation in decision-making scenarios is an important part of the class. This will include a simulation of the NASA mission management team just prior to the loss of the Space Shuttle *Columbia* in 2003. The class will conclude with a group exercise involving the interaction of diplomatic, intelligence, military, and economic interests in a hypothetical space conflict. Students will take on the role of national decision-makers in responding to unfolding events involving the conflicting space interests of the United States, China, Russia, the European Union, Japan, and other space powers in a scenario set around 2030. It will be played during two class sessions and involve intra- and inter-team communications outside of class.

Learning Outcomes

Students will be able to identify and understand the interaction of technical and regulatory factors applicable to dual-use space technologies.

- Students will be able to understand and evaluate the elementary impacts of organizational, budgetary, and cost uncertainties on the acquisition and operation of space systems.
- Students will be able to work collaboratively with others by participating in problemsolving and decision-making situations characterized by imperfect information.

Office Hours: By appointment

<u>Grading</u>: The class is a participatory seminar, with primary emphasis on reading assignments, class participation, and writing assignments – including problem sets that illustrate key technical concepts. Each week during the term, students will be expected to come to the course meeting familiar with the assigned readings related to that week's topic and able to participate in discussions. Grades will be based on exercise participation (15%), completion of problem sets (30%), a student team-based tutorial on a space function assigned by the instructor (15%), and a 12 to 15-page (5,000-6,000 words) research paper on a topic of the student's choosing, subject to approval of the instructor (40%). Papers should be submitted electronically to space1@gwu.edu no later than five days after the end of the course.

<u>Guidelines for tutorials presentation:</u> The tutorial is an opportunity to explain a particular space function in slightly more depth and educate others in the class on its technical, operational, and policy significance. Student will self-organize into teams (of 2-4 persons per team) to present on specific functions. These will include positioning/navigation/timing (PNT), space communications, remote sensing, weather (Earth and space), surveillance and warning, and space launch. Total presentation time cannot exceed 20 minutes (e.g., less than 10 charts, ~15 minutes). The presentation will be graded for accuracy, clarity, objectivity, and completeness.

<u>Student preparation for the scenario exercise</u>: Teams will prepare position papers for use in the scenario and presentation to the class during each day of the exercise. Students may also prepare background papers to support their positions. The bulk of time required for the exercise will consist of inter-group negotiations outside of the class itself.

Credit Hour and Class Policies

Over 15 weeks, students will spend 2 hours per week in class. Required reading for the seminar meetings and written response papers or projects are expected to take up, on average, 6 hours per week. Over the course of the semester, students will spend 30 hours in instructional time and 90 hours preparing for class.