Course Home Page

Emerging Space Powers

INR 4765

Spring 2018

Instructor Contact:

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Overview

Space policy remains a field that stands astride both the future and history in its scope, both idealistic and very practical. That means the quest to reach and explore outer space began many years ago as futuristic dreams and visions and is presently being pursued as an everyday reality across various sector of human life. This course focuses upon the use of space applications for the economic and social development of states across the globe with the military implications always lingering in the background. The primary focus here is upon the use of space for national development as different states define that goal. Two courses, one being PUP 4510 Space Policy deals with the development of the American space program while the other course, INR 4774 – Military Space Policy, deals explicitly with military space policy – a field of burgeoning interest to a multitude of states. Space policy as a field arose out of the dreams of visionaries but came to its first fruition as part of the now defunct Cold War competition between the United States and the former Soviet Union, now the Russian Federation.

That international political and military competition created a policy dichotomy between military and nonmilitary that still impacts the field when people ask whether a specific space application is dual use or not? That is: can the same

technology with minimal modifications be employed for both military and civilian purposes? For example, the same rocket can serve as a launch vehicle taking a satellite to orbit or a ballistic missile carrying a warhead to a distant target. Most space applications clearly possess this dual use nature.

For emerging states, there are two paths to engaging in space activities. One builds off national efforts to develop missiles which are later converted to launch vehicles but the other which is more common is that a state identifies an economic or social goal that requires space based applications in order to be achieved. These states in effect operate on the fringes of the first world space programs, benefiting from their technology development but moving in their own directions. An example of the first path would be China which initiated a missile program which morphed to include the developmental aspects of space while India's space program began originally and still heavily influenced by the expectation that space activities must assist the society in improving its level of economic development.

Since the end of the Cold War in 1991, the answer has changed based on past performance and current results including even poorer states especially because future space applications hold the potential to become an even more useful one for broader societal purposes. Poorer societies can benefit due to the ability of earth orbiting satellites to provide disaster warnings such as identifying growing droughts or the spread of disease or weather patterns likely damaging such as hurricanes. Remember the first images from space of weather formations such as hurricanes did not become available until the 1960s.

What is so particularly challenging for the United States currently is that the vision that sustained the 1960s Apollo Program and the International Space Station (ISS) has politically run its course. This issue is best symbolized by the 2011 end of the Space Shuttle program with no immediate successor flight program on the horizon. Where the U.S. space program goes from here is being intensely debated but any definitive decision is not coming quickly because any government led program demands long term funding and commitment by Congress and the U.S. people. In an era of deficits, battles over national debt, and partisan gridlock a large scale civil space program is unlikely unless the aliens show up on our door step. Presidents can only propose but only Congress and ultimately the public decide how far things will go. The public remains supportive but only in a general sense. International competitors exist at least rhetorically to the U.S. and Russia but the test remains their willingness to continue expending large amounts of precious human and economic capital for increasing less political advantage. China appears to have made that commitment. Private sector solutions flounder on the fact that

the companies must make a profit. Going to Mars while intriguing even exciting does not hold any obvious profits for the private sector which would pay for the effort. What that means is that most private sector proposals assume the government must support the effort; otherwise, it will not happen. This is even clearer in the context of developing states where the government is expected to lead. Efforts to spin off space technologies to the private sector remain problematic in developing countries.

Conceptually, space activities began as an extension of the Cold War political-military competition. Thus, its content and structure reflects those military origins while its history also illustrates the difficult process of disengaging the nonmilitary sector from those roots even in developing countries. That separation process is a slow and difficult one, but necessary if the full potential of space activities is to be realized for humanity's sake. The continuing U.S. political controversy over technology exports to China and other states is rooted in that earlier restrictive political-military perspective. That perspective assumed that states outside the developed world were incapable of building indigenously similar technologies. Generally speaking, almost all space technologies are clearly dual use in nature; meaning the same rocket can carry either a satellite to orbit or a warhead to a target across the globe. Caution therefore characterizes the American response to fostering that technology's wider dissemination. However, regardless of U.S. concerns, other states both U.S. friends and more hostile states are demonstrating the independent capability to develop space technologies equivalent to U.S. technologies or even better in some cases.

Text Materials:

Text materials will appear in several forms: excerpts from a book and materials found on the web. Reading assignments will appear in the modules along with other readings you are responsible for completing. Students are responsible for keeping current with reading assignments. Reading assignments are specified in the modules.

Course Objectives:

Students will acquire a general understanding of the historical foundations, present context and future development of outer space as an arena for human activities especially in the developing states. As part of that process, students will

1. Develop an understanding of the field's historical development.

2. Understand the influence of technology and politics upon national development of space activities. Space activities are immersed in politics often to the engineers' dismay but a reality that exists.
3. Develop an understanding of the international implications of space activities and its evolution as field as new states enter the field.
4. Become aware of the organizational forums and processes (public, private and international sectors) through which outer space is accessed and exploited for human benefit.
5. Develop an appreciation for the human and economic developmental potential inherent in space activities.
6. Analyze the changing parameters of space policy as we move through the 21st century especially for states new to the field.
7. Demonstrate the ability to access information regarding various states ongoing space activities and proposed future activities.
8. Learn how to write sophisticated analyses of issues within the ambit of space policy globally.

Communicating within the Course

In this class our official mode of communication is through email located inside Canvas or through roger.handberg@ucf.edu. All communications between student and instructor and between student and student should be respectful and professional. It is the student's responsibility to check the course email tool frequently to keep current with any announcements. You must also create a Knight's Email account at www.knightsemail.ucf.edu for separate official communications from the university or the instructor. Inquires about your grade or other aspects of the course can only be answered through the Knight's email system, not Yahoo, Gmail or other commercial vendors. This is a university policy required by federal law, the instructor is not authorized to ignore. If you are able, you can meet with the instructor during normal office hours or make an appointment for other times as necessary.

Grade Structure:

Grades are determined through a variety of student activities including two examinations taken on line through the course quiz function, three assignments completed on the web, and a web link search for extra credit. The overall weight assigned to each activity is shown below with a brief description provided for each facet. Due dates items are due is provided in the assignments section of the course website. A total of 1000 points will be assigned across the semester with each

graded segment assigned a point value. Final grades will be recorded as A, B, C., etc rather than incorporating pluses and minuses. Grades are posted through the course website and accessible as soon as the materials are graded.

Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an "F" for that assignment (and **may** depending on the severity of the case, lead to an "F" for the entire course). such actions will be also subject to appropriate referral to the Office of Student Conduct for further action. See the UCF Golden Rule for further information, http://goldenru l e.sdes.ucf.edu/. I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, don't cheat by giving answers to others or taking them from anyone else. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone.

Examination – 20 %

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Assignments– 60% total (total of three assignments across the term)

Introductory Assignment – 5% - extra credit –only opportunity for extra credit provided during the term, once the introductory assignment close; no other extra credit opportunities will be made available. There are discussions included in several modules; you must participate in the discussions if you wish to have any instructor consideration given if your final grade ends up on the cusp of an "A" or a "B," etc. The instructor at the end of the term will assess whether you have participated in discussions or not, if not, no additional consideration will be given if your grade is between a letter grade or not. If you chose not to participate there is no punishment, this is strictly an add if necessary.

NOTE: All assignments and other submissions are to be done in MS Word format; otherwise, I am unable to open the document. This may lead to a delay in grading the materials while you resubmit the assignment. A second occurrence will result in a "zero" for the assignment. This restriction means no Word Perfect, MS Works or other word processing programs are accepted.

Examinations can incorporate both essay and short answer formats but more usually are essay format. Students will be queried as to their understanding of the

processes engaged in developing space policy. The Assignments will test student understanding of different information and concepts discussed in the modules and in the readings. The Introductory Assignment involves students answering several questions about the course assignments and demonstrating certain techniques related to successfully completing the course. This is the only extra credit assignment available during this course so do not ask for additional attempts at extra credit.

The Web Link Annotation as part of the Extra Credit involves students locating Internet links not already identified in the course. Their assignment becomes annotating (describing and evaluating) in general terms the particular site's content, usability and then make some assessment as to its validity, usefulness and reliability as a possible source of information including its sponsor. Simply put, is the link worth accessing or not? Much of the material on the Web is of dubious reliability, becoming a critical content evaluator and consumer of information is an important part of the course.

Course Assignments:

In this segment of the course, all students are to participate by completing the assignment as specified in the modules. You will have adequate time to complete the assignment based on reading modules, assigned readings and research through the web or library. **All assignments are to be a minimum of 1,500 words, 10 references (not including the textbook or modules), only half can be solely web although library journal articles accessed through the UCF Library website are not considered web only. Pages in the assignment should be numbered. Wikipedia is not an acceptable reference; points will be deducted for its use, a second use will lead to a failing grade for the assignment. Remember assignments must be in Word format. Late assignments are graded down a letter grade a day until an F grade is reached. For assignment formatting, you must use the referencing system used by the American Political Science Review which is available on line through googling for the style sheet.**

Financial Aid Assignment:

There is a Financial Aid Assignment that all students receiving financial aid must complete in a timely manner in order to verify their attendance in the course, go to the Assignments tab to locate the requirement. Failure to complete this assignment could lead to you being required to immediately repay loans or not receive your

financial aid. This is a federal requirement being enforced at UCF through Financial Aid.

Course Syllabus

INR 4765– Emerging Space Powers

Schedule – Spring 2017

Module #	Module name	Date Open	Date Close	Assignment* Remember Reading Assignments in the Modules
Module 0	Getting Started	January 8th	January 17th at 11pm	Complete extra credit in Module 0 including posting web annotation to the drop box
Module 1	Introduction - Historical, the Space Age's Beginnings, Determining Why Space Activities?	January 8th	January 17th at 11pm	Read Materials and respond to Discussion Group: "Was the Apollo Program a Freak of the Cold War? Work on Assignment 1
Assignment 1	Assignment 1	January 8th	January 30th at 11pm	Turn in Assignment 1
Module 2	Organizing Space, Determining Level of Engagement in Space Activities	January 17th	January 30th at 11pm	Complete Work on Assignment 1
Module 3	Organizing Space Internationally, the International Space Infrastructure	January 31st	February 8th at 11pm	Begin Work on Assignment 2
Module 4	Organizing Space, Dual Use Technology Issues	February 9th	February 16th at 11pm	Read materials and respond to Discussion Group: "Can Rising Space powers operate

				without interference?" work on Assignment 2
First Test	Test	February 17th	February 20th at 11pm	Complete exam on line
Module 5	Enter the Second Wave	February 21st	March 2nd at 11pm	Complete Readings
Assignment 2	Assignment 2	January 31st	March 8th at 11pm	Turn in Assignment 2
Module 6	Enter the Third Wave	March 9th	March 23th at 11pm	Complete readings
Module 7	Enter the Fourth Wave	March 24th	March 30th at 11pm	Start Assignment 3, Complete readings & Respond to Discussion Group:" Should there be unlimited access to space based media?"
Module 8	Space Science, Frill or Symbol or Necessity?	March 31st	April 6th at 11pm	Complete readings
Assignment 3	Assignment 3	March 24th	April 9th at 11pm	Complete Assignment 3
Module 9	Ultimate Symbol of Success or Mirage, Human Spaceflight	April 9th	April 16th at 11pm	Complete readings
Module 10	The Future?	April 17th	April 23th at 11pm	Complete readings & Respond to "Can space based applications actually improve underdeveloped countries?"
Test 2	Test	April 24th	April 26th at 11pm	Complete exam on line