Syllabus

Current as of: 27 Sep 17

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SOC Flight Chief

ADVANCED SPACE OPERATIONS SCHOOL
Peterson AFB, Colorado
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I. SOC-DL Overview

The SOC-DL is a hybrid distance learning course consisting of two parts: A 45-day instructor led (synchronous and asynchronous) online course utilizing a learning management systems (LMS) combined with a 1-week SECRET//REL to USA, FVEY in-residence portion providing a foundation of space knowledge for new space support personnel, acquirers, engineers or those with little space operations exposure. It introduces students to the areas of doctrine, orbital dynamics, space environment, space law, physical science aspects of space systems, force applications and other related subjects that enhance student understanding of the operational aspects of space. Successful completion of both parts results in Space Professional Development Program (SPDP) level 1 education credit. This course also counts as 40 Continuous Learning Points (CLPs) for SMC University’s continuing education program.

COURSE GOAL

Provide students with a basic understanding of space systems and how those system capabilities are used to support global joint military operations.

COURSE OBJECTIVES

After graduating from the SOC-DL, you will be able to:

- Comprehend the fundamental principles of operating space systems as well as how those principles shape spacecraft and space mission designs

- Comprehend how current space capabilities fulfill the space mission areas specified in Joint Publication 3-14, *Space Operations*, and how those missions are integrated into theater joint operations

To meet these objectives, the course is structured in such a way that it “tells a story.” Students are introduced to space by covering the significant past and current space events, milestones, capabilities, as well as space treaties laws, policies and doctrine which have shaped our current organization, structure and mission. Next, students learn about the science of space with lessons in electromagnetic spectrum, orbits and trajectories, rocket propulsion, space environment, communication fundamentals, and radar/electro-optical basics and how they affect spacecraft design and space mission operations. Finally they learn about current space capabilities and space systems supporting the mission areas specified in Joint Publication 3-14, *Space Operations*, and how these capabilities are integrated into theater joint operations and support the warfighter.
II. Academic Policies and Procedures

**Attendance Policy**

Student attendance/participation during all defined class sessions is mandatory to successfully graduate from the SOC-DL. The online, distance learning portion of the course is a university-like instructor-led online program leveraging high-fidelity course material. During the online portion of the course, students must meet all assignment deadlines and lesson completion timelines as defined in the learning management system (LMS) course layout and section III of this syllabus. Each learning week is locked preventing students from working ahead so at the end of each learning week once students have completed all the weekly course requirements they will receive an advancement code key to unlock the next week.

It is very important that students meet the weekly training requirements. **There is an expectation that some course material may need to be accomplished outside duty hours.** If a student falls two weeks behind in this course an academic review board will be held by the ASOpS leadership. In the event of an academic review board, the student’s chain of command will be notified, and the student may be withdrawn from the course.

Students are expected to complete all online requirements followed by successful completion of the in-residence portion within 45 days after conclusion of the assigned online session. Waivers will not normally be granted to the 45-day rule. Absences from in-residence class time must be pre-approved by the government instructor. Routine medical/dental appointments should NOT be scheduled during in-residence class time. Unexcused absences may result in elimination from the course. The Elimination Board is comprised of the SOC Flight Commander/Flight Chief, ASOpS/DO, ASOpS/DE, and ASOpS/CC.

**Student Participation**

The course’s format is interactive informal online lecture, discussion, and exercises. Student participation is critical to success in reaching the learning objectives, as students typically bring a wide variety of experience and perspectives to the class.

Students must come prepared to contribute to the class discussions and assignments. Online Training modules and homework assignments will provide foundational knowledge for the in-residence classroom lessons and discussions. Students will also learn from their classmates’ experience and knowledge. Students should challenge ideas or statements that don’t seem correct -- whether made by instructors or other students -- but should do so to gain understanding. Bottom line: To foster the best possible learning experience students should be prepared, be engaged, and be professional.

Once again, it is very important that students meet the weekly training requirements. **There is an expectation that some course material may need to be accomplished outside duty hours to avoid falling behind and be in danger of being withdrawn from the course.**
COURSE MATERIAL

The online portion of the course will be presented using a LMS providing multi-modal lesson presentations. Digital copies of all key courseware documents will be distributed or made available for student use via the LMS. Additionally, students will be granted access to an online copy of the course textbook (Understanding Space) for the duration of both parts of the course. Students will receive an electronic copy of a study guide with learning objectives and “questions to consider” for each lesson. Students are responsible for bringing a paper copy of the study guide as well as additional materials to take unclassified notes during the in-residence portion. Please note student owned or supplied computers will NOT be permitted in the classroom. If the student wishes to study outside of the classroom, it is recommended they print copies of the courseware provided via disk or online site or have access to a computer in their home or hotel room.

EVALUATIONS

Throughout the online portion of training there will be graded quizzes at the end of each lesson as well as several other graded assignments including various discussion forum responses used to evaluate student comprehension during the online portion. Students must pass all five closed-book multiple-choice block tests (three online and two additional in-residence) at the knowledge and comprehension levels of learning in this course.

Minimum passing grade for all graded assignments is 70%. The online portion of the course is worth 1050 points (Block tests – 200 pts each x 3, Quizzes 10 pts each x 24, Discussion Participation 210 pts). The in-residence portion of the course is worth 950 points (Block Test – 250 pts each x 2, Design exercise 200 pts, Mission Design Exercise 250 pts). Students will be provided additional training and feedback as required should they fail a graded event. If a student fails a block test they will be given the opportunity to take an alternate test. If a student fails the second test, an academic board will be convened with the lead government instructor, ASOpS/DO, ASOpS/DE, and ASOpS/CC to determine if the student is allowed to continue.

LATE WORK/LATE ASSIGNMENT POLICY

Any assignments, to include quizzes, and Block tests turned in/completed past the assigned academic week (as stated by the Instructor) will get 10% off per day, up to 4 days late.

This does not include discussion questions which must be completed within the specified academic week.

GRADUATION

Students must successfully complete 100% of the online portion as well as participate in all the lessons during the in-residence portion, per the attendance policy above to graduate.

ASOpS may authorize a waiver of graduation requirements when students cannot complete them due to extenuating circumstances. Consideration will be given to what is in the best interest of the government, service, unit, and the student.
Successful completion of the complete SOC-DL is followed by a graduation ceremony. All graduating students should plan on attending graduation. The uniform for graduation is standard class attire (not travel attire).

**ACADEMIC FREEDOM**

Academic freedom is the privilege of debate with discretion on any subject related to the ASOpS curriculum within the classrooms. Students are encouraged to support or criticize any objective, policy, or opinion in the pursuit of knowledge and understanding, but with dignity and respect. Bottom line: Be professional.

**NON-ATTRIBUTION POLICY**

*Non-attribution Definition:* Treating statements made in a school forum (including, but not limited to, seminar discussion, CD-ROM, and online) as privileged information. Do not attribute any statements to a specific individual.

*Non-attribution Policy:* Statements, disagreement, and other comments made by individuals or groups in the school forum are safeguarded through the practice of non-attribution. It is acceptable to say a "previous speaker" made a particular statement, but the speaker's name will not be divulged.

*Your Responsibility:* If you violate the non-attribution policy, you will be subject to adverse administrative and disciplinary action. Military personnel subject to the UCMJ, who violate the non-attribution policy, are subject to disciplinary actions under the UCMJ. Cases involving civilian personnel will result in a memorandum to the civilian's supervisor describing their violation of the ASOpS academic freedom or non-attribution policy. You are also subject to faculty board action under AFCAT 36-2223, USAF Formal School, and AFI 51-602, Boards of Officers.

**INSTRUCTOR-STUDENT RELATIONS**

Students are encouraged to consult with me, (online instructor) concerning problems with subject matter, grade computations or academic assignments. The SOC-DL faculty is extremely interested in student success, and I will make every effort to help settle any issues. I will maintain the following office hours throughout the duration of our course. (Tuesdays 1700 – 1800hrs and Thursdays 1800 – 1900hrs Eastern Time. I will be live for telephone calls at XXX-XXX-XXXX) and email via asopsdistancelearning@gmail.com. During all other times, I will respond to all communications within 24hrs. The chain of command for resolving conflicts in academic matters is the Instructor, the Flight Commander/ Flight Chief, ASOpS/DO, and the ASOpS/CC.
III. Subject Matter Areas

INTRO, ADMIN, AND PRE-REQUISITES (ONLINE)

Overview

This block helps students understand how to navigate and use the Litmos LMS. Upon completion of this block, students should be familiar with all required tools and capabilities to ensure successful interaction with the LMS, the instructor and fellow students as well as ensure successful completion of the entire space operations course distance learning format. Students will also complete a learner checklist, download key documents and complete all the pre-course reading assignments.

BLOCK I – SPACE OPERATIONS FOUNDATIONS (ONLINE)

Overview

This is a general block describing the course, the “rules of engagement,” administrative announcements and introductions. It provides a high-level view introduction to space, space operations and the military and the foundational aspect of the science of space and also serves as a course motivator.

Block I Goals

The goals of this block are to know significant past and current space events, milestones, capabilities, as well as space treaties laws, policies and doctrine which have shaped our current organization, structure and mission, and to introduce the basic science that will be built upon in Block II to help understand how science drives space mission architecture, etc.

BLOCK II – SPACE OPERATIONS SCIENTIFIC PRINCIPLES (ONLINE)

Overview

This block further discusses the foundational aspects of the science that drives space mission architecture and spacecraft design, as well the spacecraft, and the systems needed to launch, sustain, and maintain a space system. It concentrates on how the pieces fit together as well as the capabilities, vulnerabilities and limitations caused by the space environment and spacecraft design.

Block II Goals

The goals of this block are to know how the fundamentals of science affect spacecraft design and space system capabilities, limitations, and vulnerabilities.
Block III – Space Mission Areas and Warfighter Integration (Online)

Overview

This block covers portions of the five space mission areas; Space Situational Awareness, Space Support, Force Enhancement, Space Control, and Force Application, and provides students with an understanding of the assets. This is the last block of the online learning portion of the course.

Block III Goals

The goals of this block are to know US and International systems involved in space, space threats and efforts to protect US systems, know how space is integrated into Theater CC’s planning processes, and how it enhances the completion of mission requirements.

Block IV – Space Mission Areas and Warfighter Integration (In-Residence)

Overview

This block continues to covers portions of the five space mission areas. This block also focuses on organization and command and control of joint force commands, space threats/international capabilities, and how space is integrated in theater operations. This is the in-residence capstone learning portion of the course and will revisit key points from the online training as well as address design concepts through an extensive design exercise.

Block IV Goals

The goals of this block are to demonstrate an understanding of space system design and how capabilities of the space force enhancement mission area and the space situational awareness mission area support joint operations. Additionally, this block is designed for the student to comprehend the organization and command and control of joint force commands, various space threats/foreign capabilities, and how space planning and execution is integrated in theater operations.

IV. Notional SOC-DL Schedule

Online Schedule (Subject to Change)

Pre-Requisites

- SOC-DL Intro and Admin and Pre-Requisites Section
  - Complete all required actions per the LMS

Week 1

- Complete Understanding Space, Space Environment, Orbits and Trajectories, and Space Law Lessons

Warning: Failure to log in within 1 week of the course start date may result in removal “with prejudice” of the student’s registration and notification of their leadership.
UNCLASSIFIED

**Week 2**
- Command and Control of Joint Operations Lessons, Space Organizations, Space Related Policy, Doctrine & Strategy Lessons, and Week 2 Discussion Questions

**Week 3**
- Block 1 Test
- Rocket Propulsion, EM Fundamentals, Communication Fundamentals, Radar Basics Lessons

**Week 4**
- Spacecraft Payloads, Spacecraft Subsystems, Space Mission Operations, Space Mission Design Lessons, and Week 4 Discussion Questions

**Week 5**
- Block 2 Test
- Spacelift, Satellite Ops, Cyberspace Operations, SATCOM Lessons

**Week 6**
- PNT, Environmental Monitoring, Space Based ISR Lessons and Week 6 Discussion Questions

**Week 7**
- Space Planning Lesson
- Block 3 Test
- End of Course survey

**In-Residence Phase Notional Schedule**
(Students will receive a current schedule on day 1 of the in-residence phase.)

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<tr>
<th>Lesson Title/Activity</th>
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<tbody>
<tr>
<td><strong>Day 1</strong></td>
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<tr>
<td>Instructor Introductions</td>
</tr>
<tr>
<td>Test: #1</td>
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<tr>
<td>Space Situational Awareness</td>
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<tr>
<td>Design Exercise Part 1</td>
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<tr>
<td><strong>Day 2</strong></td>
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<tr>
<td>Contested, Degraded, Operationally Limited (CDO)</td>
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<tr>
<td>Joint Space Operations Center (JSpOC) and the Space Tasking Process</td>
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<tr>
<td>Ballistic Missile Threats</td>
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<tr>
<td>Missile Warning and Defense</td>
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<tr>
<td>Missile Warning and Defense group exercise</td>
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<tr>
<td>Design Exercise Part 2</td>
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<tr>
<td>SpaceBall</td>
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<tr>
<td><strong>Day 3</strong></td>
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<tr>
<td>Test: #2</td>
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<tr>
<td>Joint Friendly Force Tracking &amp; Personnel Recovery</td>
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<tr>
<td>Classified Jeopardy</td>
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<tr>
<td>National Systems/Foreign ISR</td>
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<td>Foreign Counterspace</td>
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<tr>
<td>Day 4</td>
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<tr>
<td>Space Control: Offensive</td>
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<td>Space Control: Defensive</td>
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<tr>
<td>Classified Jeopardy</td>
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<tr>
<td>Space to the Warfighter</td>
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<tr>
<td>Design Exercise Part 3</td>
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<td>SpaceBall</td>
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<td>Day 5</td>
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<td>Test: #3</td>
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<td>Road to War Briefing</td>
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<tr>
<td>Mission Planning Exercise</td>
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<tr>
<td>Design Exercise-Capstone</td>
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<tr>
<td>Course Feedback and Graduation</td>
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