



CORE COMPETENCIES: The following core competencies are embedded in this curriculum: Communicate effectively in both speech and writing; Use computer systems or other appropriate forms of technology to achieve educational and personal goals.	
LEARNING ASSESSMENT	
<i>Student Learning Outcomes:</i>	<i>Suggested Means of Assessment:</i>
Compare the providers of mission planning, launch services, and spacecraft used for commercial, civilian (NASA), and DoD missions conducted from U.S. and foreign launch sites.	Weekly Reaction Paper
Evaluate the mission scenarios including suborbital, orbital, interplanetary and how near Earth and deep space missions are affected by funding sources from civilian, governmental, and international sources.	Weekly Reaction Paper
Apply the necessary international and U.S. regulatory procedures for mission planning including from the United Nations (USOOSA) and the FAA's office of Commercial Space Flight.	Weekly Reaction Paper
Evaluate how unmanned Mars missions have contributed towards the goal of a manned mission to Mars.	Weekly Reaction Paper
Evaluate the elements of a space mission including regulatory issues, launch control, range safety, mission operation functions, and the process for developing a mission operations plan.	Weekly Reaction Paper
Identify necessary planning steps for mission planning, launch integration, launch and flight elements for a current mission.	Weekly Reaction Paper
Analyze the mission design requirements for human spaceflight.	Weekly Reaction Paper
Analyze case studies of launch systems, satellites, and mission control for commercial, NASA, and DoD missions - SpaceX Dragon and Falcon; Virgin Galactic, Bigelow, and Boeing's Orion.	Case Study
Compare the operations and organization of world mission control and launch operations, including the U.S., Russia, China, N. Korea, India.	Research Paper
GRADING SYSTEM:	C+ = 77 < 80
A = 90 < 100	C = 70 < 77
B+ = 87 < 90	D = 60 < 70
B = 80 < 87	F = Below 60



DISABILITY SERVICES STATEMENT: Warren County Community College is committed to providing all students equal access to learning opportunities. Student Services is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations. Students who have, or think they may have, a disability (e.g. mental health, learning, vision, hearing, physical or systemic), are invited to contact Student Services to arrange a confidential discussion at (908) 835-2300 or by email at StudentServices@warren.edu as soon as possible. Students registered for Disability Services with Student Services, who have requested accommodations for the current semester will be provided with an electronic letter detailing individual accommodations and are encouraged to contact the instructor early in the semester to discuss accommodations outlined in their letter.

INSTRUCTIONAL SUPPORT CENTER: The Instructional Support Center (ISC), located in Room 105 across from the library, provides academic support at no cost to WCCC students and is available for courses in which they are currently enrolled. The ISC is staffed with trained professional and peer tutors who are ready to help you understand and succeed. For scheduling or further information, visit the ISC in person, online at <http://www.warren.edu/tutoring/> or by telephone at (908)835-2354.

STATEMENT AND POLICY ON CHEATING, PLAGIARISM AND ACADEMIC DISHONESTY: Students are required to perform all the work specified by the instructor and are responsible for the content and integrity of all academic work submitted. A violation of academic integrity will occur if a student: (1) knowingly represents work of others as one's own, (2) uses or obtains unauthorized assistance in any academic work, (3) gives fraudulent assistance to another student, or (4) furnishes false information or other misuse of college documents.

In cases of suspected violation of academic integrity, the incident is to be reported to the Office of Academics. A student found guilty of violating the rule of academic integrity by the Vice President of Academics will be considered to have failed in personal obligation to the College; such failure will be subject to disciplinary action by the College. Unless otherwise notified, the instructor will allow students who are pending disciplinary action to attend class.

REQUIRED FORMAT FOR RESEARCH PAPERS: Research papers written for any Warren County Community College class must conform to the required documentation style. Papers written for humanities (and some social science) classes will follow the most recent edition of the Modern Language Association (MLA) in-text citation and bibliographic methods. Social science and science papers will require the use of the most recent edition of the American Psychological Association (APA) in-text citation and bibliographic methods.

Please consult with your instructor regarding the correct documentation style to use in his/her class.



ATTENDANCE POLICY: Students are expected to attend all class sessions of courses in which they are enrolled and are responsible for all material presented in class and all homework assignments.

Grades are based on the quality of work completed in meeting the requirements for a particular course, as stated in the course syllabus and catalog description.

Excessive absence may be considered sufficient cause for dismissal from class by an instructor or other appropriate college staff member. Any decision to exclude a student from class or the College due to excessive absence shall be subject to review by the President in accordance with established procedures. Students who have not attended class are not entitled to a refund of tuition.

WCCC HAYTAIAN & MAIER LIBRARY

Text: 908-652-4445

Email: lstoll@warren.edu

<http://warren.libguides.com>

Please see the library's website above for current semester hours.

The WCCC Library offers a wide range of services to students specific to the information literacy goals of the College which includes suggesting research strategies, facilitating the use of both digital and print resources, as well as assisting students with citations to avoid plagiarism.

The library also serves as the College's computer space, with computers for students to use when the library is open. Students also have free, unlimited printing from the College's computers, as well as space to study.

The library is where students can get their college student ID cards. All students are required to get a student ID card and carry it while on campus for security purposes. To get a student ID card, you must bring another form of ID to the library. You may also be asked to bring a printed copy of your current class schedule. You can get a student ID card any time that the library is open. These cards do not expire and can be used for your duration at WCCC.

Additionally, the library participates in a national inter-library loan program which is available free to all students and faculty. You can submit ILL requests by emailing the librarian or by stopping by the library's circulation desk.



TOPICAL OUTLINE:

1. Introduction to space mission and launch operations
 - The missions, companies, and nations of space operations
2. The space mission design process
3. Orbital mechanics and the space environment
4. Launch, orbit, and re-entry operations
5. Mission regulations, international treaties, and budget
 - Public-private partnerships to advance space operations
 - Regulations and requirements for commercial space operations
6. Commercial space operations: sub-orbital, orbital, and beyond
 - Revitalizing NASA's suborbital program
 - Sustainable space tourism
7. The economic origins of space exploration from colonial America through the Cold War
8. Space exploration from the shuttle program to contemporary times
9. Space exploration: a case for Moon, Mars, and deep space missions
 - The value of the Moon: how to explore, live, and prosper in space using the Moon's resources
10. Frontiers of space risk
 - Natural cosmic hazards and societal challenges
 - Space resource prospecting & mining
 - i. In situ resource development
 1. Oxygen
 2. Rocket fuel
 3. Precious metals
11. Military space operations and intelligence operations
12. The future of space mission and launch operations
 - The New frontiers of space
 - Economic implications
 - Security issues
 - Evolving scenarios



**UAS 118 Commercial Space Operational
Missions & Launch Industry
Course Master Syllabus**

GRADING METHODS:

ITINERARY: