

The Fundamentals of Space SPACE 9001

Instructor Information

Course Coordinator: Dr. Gordon Osinski

Western Space Director, Professor, Department of Earth Sciences (cross appointed with Physics and Astronomy and Electrical and Computer Engineering), and NSERC/MDA/CSA/CEMI Industrial Research Chair in Earth and Space Exploration.

Instructors: Various Faculty and Special Guest Lectures

Course Syllabus, Schedule, Delivery Mode

What is Space? Who owns the moon? Why should we go to Mars? This online course discusses the big and little questions about the various aspects of the study of space that will serve as a primer for students undertaking the Professional masters in space studies program. Students will be exposed a variety of diverse perspectives on the many facets of Space.

Objectives:

At the end of this online course students will:

- Describe the roles and responsibilities of Government and Private Industry in space
- Discuss the implications of the Artemis accords on the future of Space travel, resources, and exploration
- Identify the various ways remote sensing technologies are employed in tracking biodiversity on earth
- Demonstrate effective science communication methods and skills
- Identify the major entities currently working in the Space Industry

Schedule

Week 1

- A brief history of the utilization of space and its exploration: from the development of the first rockets in the early 20th century, to the first successful satellite launch (Sputnik-1) in 1957, to the advent of human spaceflight, up to the completion of the International Space Station in the 2000's.

Week 2

- Big science questions driving the utilization and exploration of space: from climate change to the search for life in the universe.

Week 3

- The international space community: an introduction to the roles of government, industry and academia.

Week 4

- Satellites then and now and the CubeSat revolution

Week 5

- Space governance, policy and law

Week 6

- The utilization of space for Earth remote sensing, monitoring, communications.

Week 7

- Human space exploration in the 21st century: The Moon, then Mars and beyond.

Week 8

- Space tourism

Week 9

- Space Force: the military uses of space.

Week 10

- Space Resources: From in situ resource utilization to enable a sustained and expanded robotic and human exploration of the solar system, to the eventual mining of resources on the Moon, asteroids, and mars

Week 11

- Space is dangerous: the challenges of long-term human spaceflight.

Week 12

- Science Communication and the power of using space to engage young minds in STEM disciplines.