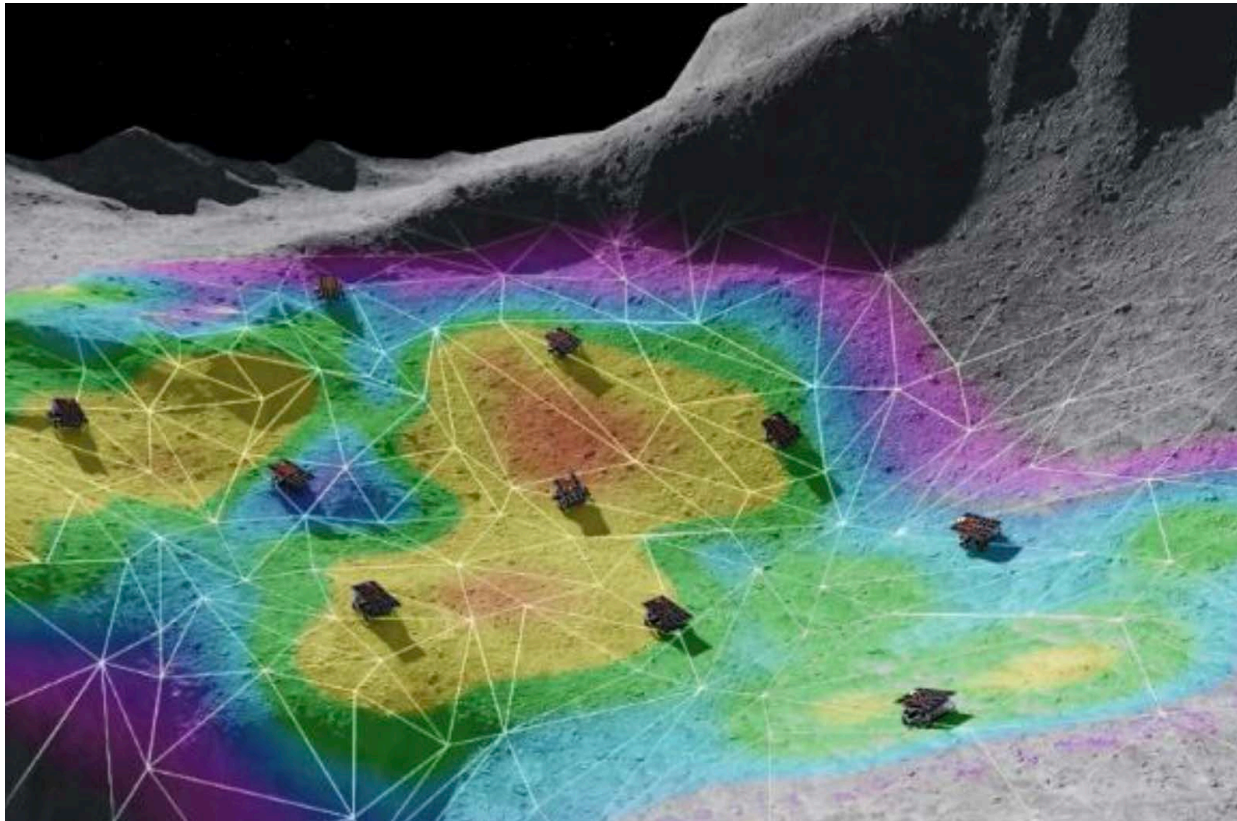


INTERFACULTY GRADUATION

ET4300/ AE5722: LUNAR ARCHITECTURE & INFRASTRUCTURE



Source: EEMCS)

Tutors

Raj Rajan, Chris Verhoeven, Fabio Sebastiano (EEMCS) and Reza Sabzevari (AE)

Course coordinator

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<u>Code</u>	<u>ET4300/ AE5722</u>
<u>Credits</u>	<u>30</u>
<u>Location</u>	<u>Moon</u>
<u>Excursion</u>	<u>-</u>
<u>Costs</u>	<u>-</u>

Mirroring the interdisciplinary nature of space colonization projects where engineers, architects, roboticists, and space scientists work together to achieve common goals, this interfaculty graduation is designed to foster collaboration and shared objectives among students from various faculties.

To survive in outer space, humans need protection from radiation. Such protection requires architecture and infrastructure to ensure habitation and accommodate various activities ranging from living and working (e.g., habitat, roads), to generating energy (e.g., solar energy equipment, storage), and facilitating communication (e.g., base stations), while relying heavily on in-situ resource utilization and a high degree of automation.

In order to enable future crew mobility, exploration and settlement, a swarm of rovers will cooperatively explore the lunar landscape and assist the humans in various activities. One of the key challenges in this regard is the need for each rover to be autonomous, and yet collectively as a swarm behave as a single mission-oriented entity.

In this regard, various aspects need to be considered for executing diverse tasks relying on Swarm Intelligence (SI) where SI is a decentralized and self-organizing approach which manages the division of labor between various types of robots at different times.

Various systems engineering challenges related to the Lunar infrastructure, ranging from space transportation systems to energy generation and management, including their intrinsic relationship with in-situ production and manufacturing need to be considered.

Additional info available on 29th April, 12:45, room C, Faculty of Architecture and the Built Environment and on the Robotic Building website (<http://www.roboticbuilding.eu/project/moonshot/>).