ASTE 599
Human Factors of Spacecraft Operations

Fall 2018

Wednesdays, 3:30-6:10 pm, on-campus and DEN

Course Description

This course provides a fundamental understanding of the human factors specific to space flight that must be taken into consideration in the design of spacecraft which incorporate human-in-the-loop control. Students will be taught how to design human factors experiments utilizing task analysis and user testing with quantitative evaluation metrics to develop a safe and high-performing operational space system.

Students will be responsible for creating a human factors test report to document the results of a semester-long design project.

Topics

- Human needs, capabilities, and limitations
- Task analysis and functional allocation
- Design of human factors experiments
- Situation awareness
- Workload
- Usability
- Space vehicle displays and controls
- Piloted spacecraft handling qualities
- Human error analysis and prevention
- Anthropometrics and astronaut safety
- Human supervisory control of automated systems

Prerequisites

- None

Required reading materials

- Lecture notes and publically available reading materials will be provided throughout the course.

Supplementary reading materials

- *Space Safety and Human Performance*, Sgobba, T., et. al., Elsevier, 2018. (ISBN: 978-0-08-101869-9)
- *Human Factors in Simple and Complex Systems*,(2nd. Ed.) Proctor, R.W. and Van Zandt, T., CRC Press, 2008. (ISBN: 9780805841190)
- *An Introduction to Human Factors Engineering* (2nd Ed.) Wickens, C.D., Lee, J.D., Liu, Y. and Becker, S.E.G., Pearson Prentice Hall, 2004. (ISBN: 0-13-183736-2)

Instructor

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