Space and Satellite Technologies
(specialization: Engineering and Management of Space Systems)

Academic Year 2021/2022

1. Describe a chosen crisis and authority response. (CM)
2. How can satellite technologies be used in crisis management? (CM)
3. What is critical infrastructure? Define the CI identification criteria. (CM)
4. Explain information security properties. (CS)
5. Describe A:F cyber threat taxonomy. (CS)
6. Describe the risk management process in context of cybersecurity. (CS)
7. Describe basic best practices of cybersecurity and argument why they are important. (CS)
8. Describe the principle of working of a drop tower. (GRR)
9. Describe the principle of working of a hypergravity centrifuge. (GRR)
10. Describe the environmental factors causing why the hardware to operate in space is designed differently? (GRR)
11. What are the 3 modes of heat transfer and what is their application in space? (HMT)
12. What is a heat pipe and how is it applied in space? (HMT)
13. Describe active and passive methods of heat control of a spacecraft. (HMT)
14. What is mission analysis? (INTP)
15. Describe satellite payload subsystem. (INTP)
16. Describe satellite structures and mechanisms subsystem. (INTP)
17. Describe satellite thermal subsystem. (INTP)
18. Describe satellite communication subsystem. (INTP)
19. Describe satellite power subsystem. (INTP)
20. Describe satellite AOCS subsystem. (INTP)
21. Describe satellite propulsion subsystem. (INTP)
22. Describe satellite data and command handling subsystem. (INTP)
23. Describe ground system. (INTP)
24. What types of requirements are there? (INTP)
25. What is a CubeSat and what requirements does it have? (INTP)
26. What budgets are important while preparing a space mission? (INTP)
27. What is a risk register? (INTP)
28. What is a business model canvas? (MSI)
29. What is a project? (MSI)
30. Describe SMART goal setting technique. (MSI)
31. Describe effective communication process in team management. (MSI)
32. Describe ESA mission phases. (PM)
33. What are the differences between a classical and an agile development approach? (PM)
34. Describe ESA tender process. (PM)
35. What is a Gantt chart? What is a critical path? (PM)
36. What is a WBS? (PM)
37. Describe the magic triangle of project management. (PM)
38. What is a stakeholder in a space project? (PM)
39. What is SWOT analysis? (PM)
40. What is the difference between forward and inverse kinematics? (RHH)
41. What is the difference between parallel and serial kinematics? (RHH)
42. Describe applications of robots in space. (RHH)
43. Describe the principle of GNSS operation. (SN)

44. Describe the difference between GPS, A-GPS and D-GPS. (SN)
45. Define commercial applications of satellite navigation systems. (SN)
46. Define the spatial, temporal, spectral and radiometric resolution of a satellite imaging system. (SRS)
47. Describe how a VIS-IS satellite sensor operates. (SRS)
48. Describe how a SAR satellite sensor operates. (SRS)
49. Compare advantages and disadvantages of radar and optical remote sensing. (SRS)
50. Describe the origins and concept of international space law. (SL)
51. Describe the four different verification methods. (SSE)
52. List typical satellite subsystems. (SSE)
53. What is the role of a system engineer in a space project? (SSE)
54. What is concurrent engineering? (SSE)
55. Why is requirements engineering needed in a space project? (SEE)
56. What properties characterise well-stated requirement? (SEE)
57. What are the best practices of defining the requirement? (SEE)
58. What is verification and validation? (SEE)
59. Give two examples of raster and vector data processing methods and describe their characteristics. (SDP)
60. What is GIS? (SDP)

Courses names abbreviations:

- CM – Crisis management
- CS – Cybersecurity
- GRR – Gravity-related research
- HMT - Heat and mass transfer in lack of gravity
- INTP – Interdisciplinary project I+II
- MSI – Management in space industry
- PM – Project management
- RHH – Robotics for human health and performance
- SN – Satellite navigation
- SRS – Satellite remote sensing
- SL – Space law
- SSE – Space systems engineering
- SDP – Spatial data processing technologies