Curriculum for the Master's Programme

SpaceTech – Master in Space Systems and Business Engineering

of Graz University of Technology

The curriculum of the master's programme SpaceTech – Master in Space Systems and Business Engineering was decided by the Curricular Committee for Doctoral Programmes and University Certificate Programmes and approved by the Senate of Graz University of Technology during its meeting on June 26, 2023, in accordance with § 56 Universities Act 2002, Federal Law Gazette I No. 120/2002 as amended.

The legal basis for this master's programme is the Universities Act (UG 2002) as well as the Legal Regulations for Academic Affairs of the Statutes of Graz University of Technology in the currently applicable version, as amended.

Please note: the English version of this document is a courtesy translation. Only the German version is legally binding.

Change history

Version	In effect as of	Brief description of the change
01	03/08/2023	First submission

Curriculum for the Master's Programme

SpaceTech – Master in Space Systems and Business Engineering

Curriculum 2023

I General Provisions

§ 1 Object of the master's programme and qualification profile

The master's programme SpaceTech is offered as a part-time continuing education programme that lasts four semesters. The total scope of the master's programme is 120 ECTS credit points. As an internationally oriented master's programme, all courses are conducted in English. Graduates of this programme are awarded the university degree of "Master of Science (Continuing Education)", abbreviated as "MSc (CE)".

(1) Object of the master's programme

Space programmes are currently experiencing a boom. This growth phase is fuelled by state-of-the-art research, offering the possibility of transferring newly developed technologies to practical areas of application. Initially, space travel was mainly the domain of governmental space agencies. In recent decades, however, there has been a growing commitment from private companies and the space sector, which is successfully opening new business areas such as satellite services for the communications, navigation and remote sensing sectors as well as space transportation, space tourism or the possibility of future extra-terrestrial raw material mining.

The space industry has continued to evolve in the direction of multinational companies in recent years. Mergers and acquisitions have led to a changed market situation, particularly in Europe: instead of many small potential prime contractors from different countries competing for future satellite or transport contracts, only a handful of transnational space businesses and organisations are still competing. The space industry and space agencies have thus identified a need for further training of their future system engineers and programme managers to prepare them for their work with and for management and leadership tasks in international teams. Above all, the industry needs specialists who are both highly qualified in the technical fields and able to implement modern business practices, which are necessary in today's competitive environment to be able to survive in a tough market. In the space industry, a thorough understanding of system technology and business administration is a basic requirement for the efficient development, marketing and sale of successful products. Especially when it comes to the managerial level and beyond, managing multinational working groups requires employees who understand the cultural and linguistic differences of their team members who may have different cultural, training and professional backgrounds.

(2) Qualification profile and competences

Upon graduation, students of this master's programme will have obtained subject-specific knowledge in a wide variety of disciplines related to space technology as well as of state-of-the-art technical and scientific developments. The interdisciplinary knowledge acquired enables them to successfully solve complex problems in a competitive, rapidly changing international environment. They can apply the strategies learned to develop projects together with other international partners, making full use of their complementary skills as well as managing projects with tight timeframes and limited budgets.

Graduates of the programme are able to

- apply systems engineering processes, tools and techniques for use in commercial or government space projects.
- create, analyse and evaluate proposed space system engineering plans to assess basic feasibility.
- prepare and evaluate a complete business plan for a proposed space project, including customer products/services and financing data.
- take on technical management of projects, analyse and evaluate team performance and issues that may affect project success and, if necessary, implement a remedial strategy.
- apply the technical aspects of space communications, navigation, remote sensing and space operations.

(3) Need and relevance of the master's programme for science and the labour market

The space industry is urgently looking for highly qualified employees who are able to combine technical, systemic, economic, organisational, managerial and personnel management skills for successful production. The master's programme SpaceTech is designed for mid-career experts in the space industry who are perceived by their employers as exceptionally suitable specialists with strong leadership skills. The programme offers them a compact and comprehensive university education in the field of space systems engineering and business engineering, which prepares them in the best possible way for future senior, managerial and leadership positions in the space industry. The mission statement of this continuing education programme was defined in a sustainable process. It reads:

The master's programme SpaceTech offers further training for international specialists who already have several years of professional experience in the space industry and would like to obtain the best possible further qualifications in the field of space systems and business engineering.

The vision of this continuing education programme was defined as:

The master's programme SpaceTech develops future leaders in the field of space systems and business engineering, preparing experienced specialists in the space industry for key leadership roles through first-class further education in an international environment.

Future areas of work for graduates include a variety of managerial and leadership positions in the space industry, both at private companies and at various space agencies. With its highly international focus on education, the programme provides graduates with the multidisciplinary knowledge and skills needed to handle leadership and intercultural cooperation challenges, preparing them thoroughly for this demanding work environment.

§ 2 Master's programme organiser

(1) The organiser of this master's programme is Graz University of Technology.

(2) Within the university, the programme is managed by TU Graz *Life Long Learning*.

§ 3 Duration and scope of the master's programme

(1) Commensurate with the European Credit Transfer and Accumulation System, the various study achievements and courses are assigned ECTS credit points that reflect the students' workload. One ECTS credit point corresponds to 25 full hours of workload, including both the share of self-study and the semester course hours.

(2) The master's programme lasts four semesters with a total scope of 120 ECTS credit points. The structure of the programme is explained in detail in § 9.

§ 4 Course language

(1) As a general rule, all courses are held in English.

(2) The academic direction of the master's programme is responsible for determining whether the participants have the necessary knowledge of the language of instruction (see § 7 (4)).

§ 5 Teaching and learning concept

The master's programme SpaceTech is offered as a part-time continuing education programme: by offering block-based courses and additional distance teaching units, it is possible to cater specifically to the needs of working students. In addition, a virtual teaching and learning environment provides opportunities for networking with lecturers and other students as well as teamwork outside of in-person units.

Furthermore, the programme is centred around a case study project in which the students must work both individually and in teams. This so-called Central Case Project (CCP) is a real-world

project for which the students first establish a virtual company. Based on the knowledge and skills they have learned through their courses and individual work experiences, they then have to design a space and ground segment that fulfils specific aspects of space travel and is marketed by their respective company. In the final stages of the project, the students must prove that their design appeals to a large enough market to become a credible and profitable business.

II Admission

§ 6 Admission requirements

(1) The requirement for admission to the master's programme SpaceTech is proof of the following qualifications:

- Completed degree in a technical, scientific, economic or legal discipline amounting to at least 180 ECTS credit points from a domestic or foreign post-secondary educational institution.
- At least 3 years professional experience, ideally in the aerospace/space sector, or in a closely related field.

(2) In addition to the previously mentioned qualifications, proof of sufficient English language skills is a prerequisite for admission to the programme. The type of proof required is specified in § 7 (4).

§ 7 Application and admission procedure

(1) The maximum number of places available for the programme is set at 18 by the academic direction of the master's programme based on didactic and organisational considerations. If the number of applicants meeting the admission requirements is greater than the number of available places, places will be assigned in chronological order upon receipt of the stipulated programme fee in accordance with § 16.

(2) Applications for a place in the programme must be made in writing to the academic direction of the programme and must include a fully completed and signed application form, proof of identity and proof of fulfilment of the required admission requirements (degree certificate for a degree programme, employment testimonials). An application for a place in the programme does not in itself constitute any right to actual participation. The academic direction of the programme and the Vice Rector for Academic Affairs are entitled to reject applicants.

(3) The procedure for awarding a place consists of preliminary screening of application documents by the *Life Long Learning* organisational unit, review by the academic direction of the programme and, where necessary, an application interview. An entrance examination may be scheduled.

(4) Applicants have adequate knowledge of the language (cf. § 6 (2)), either thanks to internationally recognised language certificates or school-leaving certificates (e.g., matriculation certificate, completion of a course of studies in the pertinent language of instruction) or in the course of verification by the academic direction of the programme. No proof must be furnished if the language of instruction is the applicant's first language.

(5) The decision regarding fulfilment of the admission requirements is taken for applicants pursuant to § 6 (1) on the basis of a two-person rule involving the academic director of the programme and the Vice Rector for Academic Affairs.

(6) Places are awarded in writing by the academic direction of the programme upon receipt of the stipulated programme fee. Admission to the programme as a postgraduate master's student (see § 51 (2) 22 Universities Act) is performed by the Rectorate and administered by the *Registrar's Office.*

III Programme Contents and Examination Regulations

§ 8 Types of courses

The types of course offered at Graz University of Technology are governed by § 4 of the Excerpt of Statutes: Legal Regulations for Academic Affairs of Graz University of Technology, as amended.

§ 9 Modules, courses und semester allocation

(1) The modules of the programme as well as their associated courses are listed below. All courses are mandatory. The allocation of courses to semesters constitutes the standardised curriculum:

Module name / Course	Course type	ECTS	Sem.
Space Missions		**11**	
Space Mission Analysis & Design	VO	5	1
Launch Vehicles	VO	1	1
Selected Topics	SE	5	2+3
Space Project Management		**9**	
Project Management for Space Systems	VO	4.5	1
Project Management Exercise	UE	4.5	3
Space Systems Engineering		**9**	
Space Systems Engineering	VO	4.5	1
Systems Engineering Exercise	UE	4.5	3
Business Engineering		**12**	
Business Engineering	VO	7.5	1+2+3
Business Engineering Exercise	UE	4.5	3
Leadership and Teams		**12**	
Leading Teams in a Technical Environment	VO	7.5	1+2+3
Leadership and Teams Exercise	UE	4.5	3
Space Communications and Navigation		**9**	
Navigation	VO	4.5	2
Space Communications	VO	4.5	2
Earth Observation and Human Spaceflight		**9**	
Earth Observation	VO	4.5	2
Human Spaceflight	VO	4.5	2
Central Case Project (CCP)		**18**	
Space Project Research and Analysis	PT	6	1
Space Project Implementation	PT	6	2
Space Project Presentation and Evaluation	PT	6	3
Master's thesis		**30**	**3+4**
Master's examination		**1**	**4**

(2) The content and learning outcomes of the modules are described in more detail in Appendix I Module Descriptions.

§ 10 Examination regulations

(1) A course certificate is issued in accordance with § 74 (1) Universities Act (UG 2002) for completion of each course within a module. The lecturer must determine whether a student has successfully completed a course. The lecturer must announce the examination mode before the course begins. In addition, an overall assessment is given for each module.

(2) Examinations for courses held in the form of lectures (VO) must cover the entire contents of the course. Examinations may be oral only, written only, a combination of written and oral, or computer-assisted.

(3) Courses held in the form of exercises (UE), seminars (SE) and projects (PT) shall be assessed continuously on the basis of contributions made by students and/or by means of periodical achievement reviews. In any case, the assessment must consist of at least two examinations.

(4) The positive result of course examinations is to be assessed as “excellent” (1), “good” (2), “satisfactory” (3) or “sufficient” (4) and the negative result as “unsatisfactory” (5).

(5) Students may resit examinations in accordance with § 28 of the Excerpt of Statutes: Legal Regulations for Academic Affairs of Graz University of Technology, as amended.

(6) Module grades are to be determined by
   a. multiplying the grade of each examination result in connection with the module with the ECTS credit points of the corresponding course,
   b. adding the values calculated according to lit. a.,
   c. dividing the result of the addition by the sum of the ECTS credit points of the courses, and
   d. rounding the result of the division to a whole-numbered grade if required. The grade is rounded up if the decimal place exceeds 0.5. Otherwise, the grade is rounded down.
   e. A positive module grade may only be awarded if each individual course has been assessed as positive.

(7) In addition to the assessments of the individual courses, an overall assessment is given. It is “Passed” if each module, the master’s thesis and the master’s examination have been assessed positively, otherwise it is “Failed”. The overall assessment is “Passed with distinction” if none of the abovementioned study achievements (modules, master’s thesis, master’s examination) were awarded a grade lower than “Good” and at least half of the study achievements were awarded the grade “Excellent”.

§ 11 Recognition of courses and achievements

According to § 78 Universities Act (UG 2002), the recognition of examinations can be carried out by the academic direction of the programme at the request of the student. Depending on the decision by the academic direction of the programme, this may be accompanied by an additional check of the applicant's level of knowledge. Any recognition of study credits shall not decrease the programme fee to be paid.

§ 12 Master's thesis

(1) Purpose of the master's thesis is to demonstrate the student's ability to work on scientific topics on their own, both with regard to content and methodology. The task of the master's thesis must be chosen so that it is possible and reasonable for the student to complete the work within six months.

(2) The content of the master's thesis is based on current studies, analyses and developments in the specialist field of the programme and may be carried out in cooperation with space industry and organisations.

(3) The master's thesis must be registered in writing with the academic direction of the programme before the start of processing. The subject, the field to which the subject is assigned, and the supervisor must be stated.

(4) After completing the master's thesis, it must be submitted for assessment in both printed and electronic form as a PDF.

§ 13 Final examination before a committee

(1) Prerequisites for registering for the final examination are proof of the positive assessment of all modules (see § 9) and proof of the positively assessed master's thesis (see § 12).

(2) The master's examination is an oral examination before a committee and consists of
- the presentation of the master's thesis,
- the defence of the master's thesis, and
- an examination on the subject area of the master's thesis and associated subject areas.

(3) The total duration of the master's examination is usually 60 minutes and must not exceed 75 minutes.

(4) The examination committee for the master's examination includes the supervisor of the master's thesis and two other members appointed by the academic direction of the programme in accordance with § 23 (8) to (10) of the Excerpt of Statutes: Legal Regulations for Academic Affairs.

(5) The grade of the master's examination is determined by the examination committee in accordance with § 24 (4) of the Excerpt of Statutes: Legal Regulations for Academic Affairs of Graz University of Technology, as amended.

§ 14 Completion of studies and graduation certificate

(1) Upon positive assessment of all modules, the master's thesis and the master's examination, the master's programme is completed.

(2) A graduation certificate is issued for successful completion of the programme. The degree certificate contains
1. a list of all the modules as set out in § 9 (along with their ECTS credit points) and their assessment results,
2. the title and assessment of the master's thesis,
3. the assessment of the master's examination, and
4. the overall grade in accordance with § 11 of the Excerpt of Statutes: Legal Regulations for Academic Affairs of TU Graz.

(3) In accordance with § 87 (2) Universities Act (UG 2002), graduates of this programme are awarded the academic degree "Master of Science (Continuing Education)", abbreviated as "MSc (CE)", by written administrative decision.

IV Organisation

§ 15 Academic course management

(1) The Vice Rector for Academic Affairs must appoint a member of the Institute of Communication Networks and Satellite Communications of Graz University of Technology with a teaching qualification in a pertinent subject as academic director of the programme.

(2) The Vice Rector for Academic Affairs appoints further staff members to executive academic and administrative functions at the suggestion of the academic director of the programme and based on organisational requirements.

§ 16 Tuition fee and maximum duration of study

(1) In order to conduct the programme cost-effectively, the Rectorate will determine a programme fee, adjusting it as required to budgetary needs, at the suggestion of the academic direction of the programme in coordination with the *Life Long Learning* organisational unit.

(2) The maximum study duration is six semesters (corresponds to the regular study duration plus two semesters). Admission to the programme expires after the end of the maximum study duration.

(3) If the regular study duration is exceeded, an additional programme fee may be levied for each further semester required in order to cover the costs of continued supervision and tuition of the student. The fee is specified in the current terms and conditions of payment and cancellation.

§ 17 Quality assurance

(1) Courses are evaluated in accordance with the directives of Graz University of Technology. The results of the course evaluations must be taken into account on an ongoing basis when teachers are assigned to courses.

(2) Additionally, an intermediate and final evaluation must be performed of the entire programme by means of a standardised questionnaire. The academic direction of the programme decides whether any corrective action is required based on the findings.

(3) The results of the evaluations must be documented in the form of a report and sent to the *Life Long Learning* organisational unit. Moreover, a financial report must be compiled on the performance of the programme.

(4) An academic advisory board can be established for evaluating individual courses and the further development of the programme as a whole.

V Final Provisions

§ 18 Legal validity

This curriculum comes into effect four weeks after publication in the University Gazette of Graz University of Technology.

Version of the curriculum:

Curriculum	Version	TUGRAZonline abbreviation	published in the University Gazette
2023	01	2023W	05/07/2023, 19th issue

Annex I: Module descriptions

Module 1	**Space Missions**
ECTS credit points	11
Content	- Introduction to space mission analysis and design - Space mission architecture - Launchers and mission operations - Selected topics
Learning outcomes	After completing this module, students are able to - Recall the nomenclature and processes for space analysis and mission design (SMAD) processes - Understand the space mission analysis and design processes, and associated physics - Apply the SMAD processes for a small, low-cost space mission - Analyze existing space systems to estimate performance, mass, power and overall cost - Evaluate the credibility of proposed space missions and systems with regard to the SMAD process and standards - Create a credible space mission and systems design beginning with space mission needs, goals and objectives
Teaching / learning activities and methods	Interactive lectures, seminar

Module 2	**Space Project Management**
ECTS credit points	9
Content	- Project management processes - Tools and techniques as applied to managing space systems development - Project planning overview, project plan, schedule, resource loading and project budget - Organizing the project team and leadership - Overview of systems engineering, lifecycle cost estimation, budget strategy and acquisition - Earned value management and project risk management - Decisions in projects and decision matrix
Learning outcomes	After completing this module, students are able to - Recall the nomenclature and processes for the project management of space systems development - Understand the basic principles and processes for project management of space systems - Apply project management approaches, tools and techniques to small team space systems development efforts - Analyze the cost estimate, proposed schedule and anticipated technical performance of a small-class space systems development

	- Evaluate the credibility of proposed space systems development regarding the likelihood of meeting project cost and schedule estimates - Create a credible space systems development network, schedule and overall cost estimate
Teaching / learning activities and methods	Interactive lecture, exercise

Module 3	**Space Systems Engineering**
ECTS credit points	9
Content	- Business drivers for systems engineering - Overview of the systems engineering process and formation of project teams - Identifying stakeholders and stakeholder requirements - Generating, evaluating, and selecting concepts - System scope, context diagrams and use case scenarios - From stakeholder requirements to system objectives - Completing the system requirements - Using a requirements management tool - Developing the functional architecture - Using a functional modeling tool - Fundamentals of life cycle analysis - Risk management and other programme issues - System requirements review
Learning outcomes	After completing this module, students are able to - Learn and recall the nomenclature and processes for space systems engineering to include the design analysis cycles, all process steps and associated artifacts - Understand the basic principles, processes, approaches, tools and techniques for space systems engineering - Apply space systems engineering approaches, tools and techniques to the technical development of a small space system - Analyze the technical development plan for a space system to include needs, goals, objectives, requirements, concept of operations, functional and physical architecture, design details, as well as verification and validation - Evaluate the credibility of proposed space systems development regarding the credibility of the design analysis cycle artifacts - Create a complete set of space systems engineering design analysis cycle artifacts to include needs, goals, objectives, requirements, concept of operations, functional and physical architecture, design details, as well as verification and validation
Teaching / learning activities and methods	Interactive lecture, exercises

Module 4	Business Engineering
ECTS credit points	12
Content	General introduction: - Space business - Space commercialization - Space marketing - Status quo, trends & outlook Exercise new business creation & finance: - Definitions & terminology - Financial statements: profit & loss account, cash flow statement, balance sheet, financial KPI's - Revenue and cost models - Performance & benchmarks - Tool building - Corporate finance, venture capital and other investors - Investor expectations - Valuation - Business planning - Business case and plan - Business model - Risk and risk management - Contractual relationships - Presentation issues Exercise market analysis: - Introduction to market analysis - Market entry considerations - Scenario planning and value chain analysis - Market segmentation modeling - Public vs. private goods Exercise risk management: - Basic principles of risk management - Risk management process - Space risk management plan methodology Case study space insurance: - Basic insurance principles and space specifics - Stakeholders and players - How does it work in practice? - Market data Case study legal and regulatory issues: - International legal framework - Commercial and private parties in the space arena - Trading and contracting - Specifics of selected space sectors - Background information on actual developments in the sector and selected topics
Learning outcomes	After completing this module, students are able to - Understand the commercial aspects of space systems and the key drivers to commercial success in the space ecosystem - Analyze and understand the financial statement of a company

	- Correctly apply business planning methodologies and tools in the CCP / in a start-up, corporate or agency environment - Know the investor ecosystem and describe expectations of different groups of investors - Create a business case that provides attractive (investor) returns - Understand the key drivers of successful presentations and present a compelling proposal to a target audience
Teaching / learning activities and methods	Interactive lecture, exercises

Module 5	**Leadership and Teams**
ECTS credit points	12
Content	- Individual processes and behavior: personality, perception and attribution, attitudes, values and ethics, motivation, stress - Interpersonal processes and behavior: communication, team formation and development, leadership and followership, power and political behavior, conflict in organizations - Organizational processes and behavior: organizational design and structure, organizational culture, managing change
Learning outcomes	After completing this module, students are able to - Understand key aspects of the literature on individual, interpersonal, and organizational behavior in the team context - Apply, analyze, evaluate, create and manage all aspects of the interactive effect of individual, interpersonal, and organizational behaviors within the learning laboratory (Central Case Project – CCP) toward successful, measured effectiveness
Teaching / learning activities and methods	Interactive lecture, exercises

Module 6	**Space Communications and Navigation**
ECTS credit points	9
Content	- Radio wave propagation, antennas, RF systems, communications, signal processing and networking together at system level of some knowledge on orbit dynamics and platform technologies - Global Navigation Satellite Systems: basic principles of satellite positioning, concept of GNSS, reference systems, satellite orbits, satellite signal, mathematical models, surveying with GNSS, national contributions - Inertial Navigation: sensors, platform types and alignment, navigation performance - Integrated Navigation: principles of sensor fusion, typical multi-sensor systems, state estimation / Kalman filtering
Learning outcomes	After completing this module, students are able to

	- Recall an acquired encyclopedic knowledge about space communication and navigation and are familiar with its principles and methods - Understand the design and performance of satellite communication systems - Identify main concepts of architectures (including GEO; MEO, LEO options) and applications of satellite communications and navigation - Exercise the methodology and tools to design a digital communication link - Be aware of concepts, techniques, markets of specific applications of satellite communications (broadcasting, fixed and mobile, Internet access) and underlying protocols used to exchange data - Distinguish and apply different coordinate systems and frames - Understand the physical fundamentals of different navigation sensors used in terrestrial, celestial, satellite-based and inertial navigation systems - Apply different filter algorithms (e.g. Kalman and Particle Filter) - Analyze and evaluate the performance of state-of-the-art navigation systems - Create an own (simple) navigation system
Teaching / learning activities and methods	Interactive lectures

Module 7	**Earth Observation and Human Spaceflight**
ECTS credit points	9
Content	Earth Observation: - Physics of the remote sensing measurements - Instruments, satellite and ground segment engineering - Missions and applications - Market, commercialization and trends Human Spaceflight: - Characterization of the design process - Operating environment (space, vacuum and neutral environments, radiation, micrometeoroids, and orbital debris, planetary surfaces) - Humans in space (physiology, human factors, psychology, safety and reliability) - Orbits and trajectories - Design and sizing of space habitats - Transfer, entry, landing and ascend vehicles - Surface element (base design and integration) - Mission operations
Learning outcomes	After completing this module, students are able to - Identify basic principles of physics of measurements - Experiment EO system design drivers - Implement various EO instruments designs and principles (optical, SAR, altimeters)

	- Memorize ground segment requirements and architecture - Underline specificities of systems established for operational use - Interpret key factors on the earth observation market - Describe the characteristics, challenges and opportunities of human spaceflight systems in general, and space stations in particular - Explain the subsystem concepts, design and hardware of human spaceflight systems - Describe the International Space Station (ISS) systems and utilization - Articulate the objectives of human space exploration and debate the benefits of human space exploration - Explain the roles, training and mission of European astronauts - Describe the plans and challenges of human spaceflight beyond low Earth orbit, in particular to Moon and Mars - Discuss opportunities of commercial approaches in human spaceflight
Teaching / learning activities and methods	Interactive lectures

Module 8	**Central Case Project**
ECTS credit points	18
Content	At the beginning of the lecture, the SpaceTech programme direction selects a very general space related topic for the students and provides this topic to them during the first SpaceTech presence session. They then progressively have to develop a program and a virtual business around that topic. Their first step is to identify potential customer needs and market opportunities for a project based on the given topic, and then perform market survey(s) to determine whether such a project would have sufficient demand from customers to allow a company offering products based on the topic to be profitable. This process will generally require a number of iterations before deciding on a specific product or products to pursue. Once this is done, however, the students must then do a preliminary design, end to end, of all ground and space elements needed to provide the product(s) and arrive at a baseline system design with details in every area. Finally, the students must develop a realistic and credible business case for a virtual company that could be set up to execute their program.
Learning outcomes	After completing this module, students are able to - Work as a team to create a complete concept and design for a credible space system to meet a

	set of customer needs, goals and objectives, that has an associated business case - Apply team and leadership principles to manage a year-long process devoted to developing a new space systems concept using tools and techniques from the Space Mission Analysis and Design, Space Project Management, Space Systems Engineering and Business Engineering courses
Teaching / learning activities and methods	Project