Recomended pass through the study plan

Name of the pass: SpaceMaster - Passage through study

Faculty/Institute/Others: Faculty of Electrical Engineering
Department:
Pass through the study plan: Erasmus Mundus Master Course - SpaceMaster 2018
Branch of study guranteed by the department: Welcome page
Guarantor of the study branch:
Program of study: Cybernetics and Robotics
Type of study: Follow-up master full-time
Note on the pass:

Coding of roles of courses and groups of courses:
P - compulsory courses of the program, PO - compulsory courses of the branch, Z - compulsory courses, S - compulsory elective courses, PV - compulsory elective courses, F - elective specialized courses, V - elective courses, T - physical training courses

Coding of ways of completion of courses (KZ/Z/ZK) and coding of semesters (Z/L):
KZ - graded assesment, Z - assesment, ZK - examination, L - summer semester, Z - winter semester

Number of semester: 1

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BE3M35ISME	**Introduction to Space Mechanics and Electronics**	Z	8	0P+4S	Z	P
BE3M35SPI	**Space Instruments**	Z,ZK	8	2P+2S	L	P
BE3M35SPP	**Space Physics**	Z,ZK	7	2P+2S	Z	P
BE3M35TSS	**The Solar System**	Z,ZK	7	2P+2S	Z	P

Number of semester: 2

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BE3M35APH	**Atmospheric Physics**	Z,ZK	8	2P+2S	L	P
BE3M35SEI	**Spacecraft Environment Interactions**	Z,ZK	7	2P+2S	L	P
2018_SPACEMASTER_PV	**Compulsory optionally subjects** *BE3M35ELS,BE3M35PAT,..... (see the list of groups below)*	Min. cours. 2 Max. cours. 6	Min/Max 15/41			PV

Number of semester: 3

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BE3M35CSA	**Control Systems for Aircraft and Spacecraft**	Z,ZK	7	2P+2L	Z	P
BE3M35IDP	**Individuální projekt**	Z	8	0P+6S	Z	P
BE3M35SSM	**Space systems, modeling and identification**	Z,ZK	7	4P+2C	Z	P

Number of semester: 4

Code	Name of the course / Name of the group of courses *(in case of groups of courses the list of codes of their members)* *Tutors, **authors** and guarantors (gar.)*	Completion	Credits	Scope	Semester	Role
BE3M35DIP	**Diploma Thesis**	Z	30	22S	L	P
BE3M35ORC	**Optimal and robust control design**	Z,ZK	8	2P+2C	L	P

List of groups of courses of this pass with the complete content of members of individual groups

Kód	Name of the group of courses and codes of members of this group (for specification see here or below the list of courses)	Completion	Credits	Scope	Semester	Role
2018_SPACEMASTER_PV	**Compulsory optionally subjects**	**Min. cours. 2 Max. cours. 6**	**Min/Max** 15/41			PV

BE3M35ELS	Electronics in Space	BE3M35PAT	Polar Atmosphere	BE3M35PSA	Propulsion with Space Applicatio ...
BE3M35SPC	Space Communication	BE3M35SPS	Spacecraft Subsystems	BE3M35SIS	Swedish for International Studen ...

List of courses of this pass:

Code	Name of the course	Completion	Credits
BE3M35APH	Atmospheric Physics	Z,ZK	8
BE3M35CSA	Control Systems for Aircraft and Spacecraft	Z,ZK	7
System Approach. Object, System, Model. Dynamic Systems Continuous and Discrete Time, Qualitative Analysis of Systems. Poincare Map, Chaos. Linear Systems. System Stability, Uncertainty and Robustness. Controllability and Observability. State Feedback, State Injection, Duality. Stochastic Systems, Realization of Stochastic Processes.			
BE3M35DIP	Diploma Thesis	Z	30
Independent final comprehensive work for the Master's degree study programme. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The diploma thesis will be defended in front of the board of examiners for the comprehensive final examination.			
BE3M35ELS	Electronics in Space	Z,ZK	8
BE3M35IDP	Individuální projekt	Z	8
Independent work in the form of a project. A student will choose a topic from a range of topics related to his or her branch of study, which will be specified by branch department or branch departments. The project will be defended within the framework of a subject.			
BE3M35ISME	Introduction to Space Mechanics and Electronics	Z	8
BE3M35ORC	Optimal and robust control design	Z,ZK	8
This advanced course on control design will cover modern methods for optimal and robust control design. Emphasis will be put on practical computational design skills. Unifying idea of the course is that of minimization of a system norm. Depending on which norm is minimized, different properties of the resulting controller are guaranteed. Minimizing H2 norm leads to the celebrated LQ/LQG optimal control trading off the performance and the effort, while minimizing Hinf norm shifts the focus to robustness against uncertainties in the model. Mu-synthesis as an extensions to Hinf optimal control design that take the structure of the uncertainty into consideration represents a very powerfull tool for robust control design. Standing a little bit aside yet being useful in space missions are the methods for time-optimal and suboptimal control. As a self-contained add-on to the course, introduction to the topic of semidefinite programming and linear matrix inequalities (LMI) will be made, as these constitute a very elegant theoretial and a powerful computational tool for solving all the previously introduced tasks in optimal and robust control.			
BE3M35PAT	Polar Atmosphere	Z,ZK	8
BE3M35PSA	Propulsion with Space Applications	Z,ZK	7
BE3M35SEI	Spacecraft Environment Interactions	Z,ZK	7
BE3M35SIS	Swedish for International Students 1	Z,ZK	3
BE3M35SPC	Space Communication	Z,ZK	8
BE3M35SPI	Space Instruments	Z,ZK	8
BE3M35SPP	Space Physics	Z,ZK	7
BE3M35SPS	Spacecraft Subsystems	Z,ZK	7
BE3M35SSM	Space systems, modeling and identification	Z,ZK	7
BE3M35TSS	The Solar System	Z,ZK	7

For updated information see http://bilakniha.cvut.cz/en/f3.html
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