ENROLMENT REQUIREMENTS MASTER OF ELECTROMECHANICAL ENGINEERING

In order to be eligible to take a course, you usually have to meet certain enrolment requirements. These requirements can be both pre- and corequisites. The requirement may be blocking or advisory in nature. At the VUB, there are 4 types of enrolment requirements:

1. Binding prerequisite
2. Advisory prerequisite
3. Binding corequisite
4. Advisory corequisite

Below you will find the definition of the different types of enrolment requirements. Check out the specific enrolment requirements for your programme on the next page.

BINDING PREREQUISITE

Due to certain risks and safety issues, you can only enrol in course X if you have passed, been exempted from or deliberated for course Y. It is not possible to register for courses if you do not meet the binding prerequisite.

ADVISORY PREREQUISITE

The curriculum council strongly recommends that you only enrol in course X if you have taken course Y. Although this prerequisite is not binding and it is possible to register for course X without having taken course Y, it is your own responsibility not to follow the programme's advice. This means that you do not have the required competencies.

BINDING COREQUISITE

You can only enrol in course X if you are also simultaneously registered for (or have already passed/been exempted from) course Y. In order to achieve the learning results of course X in a safe/good way, a registration for course Y is necessary. It is not possible to register for courses if you do not meet the binding corequisite.

ADVISORY COREQUISITE

The curriculum council strongly recommends that you only enrol in course X if you are simultaneously registered for (or have already passed/been exempted from) course Y. Although this corequisite is not binding and it is possible to register for course X without simultaneously taking course Y, it is your own responsibility not to follow the programme's advice. This means that you do not have the required competencies.

HAVE A LOOK AT THE ENROLMENT REQUIREMENTS FOR YOUR PROGRAMME

VRIJE UNIVERSITEIT BRUSSEL

Enrolment requirements Master of Electromechanical Engineering (120 ECTS-credits)

MODULE AERONAUTICS: YEAR 1 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Compulsory common core (24 ECTS)							
Control system design	1	5					
Design methodology	1	5					
Data-driven engineering	2	4					
Turbomachinery	2	5					
Electrical drives	2	5					
Compulsory partially common core (16 ECTS)							
Piston engines	1	3					
Structural analysis and finite elements	1	5					
Mechanical vibrations	1	5					
Composite structures	2	3					
Project (5 ECTS)							
Project in electromechanical engineering	1+2	5					
Development cooperation project	1+2	5					
Team leader project	1+2	5					
Eco-marathon project	1+2	5					
Specific courses (15 ECTS)							
Aerodynamics	1	5					
Computational modelling in Aerospace	2	3					
Aerospace seminars: Sustainability, space & Drones	2	3					
Aircraft structures	2	4					

MODULE AERONAUTICS: YEAR 2 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Master thesis	1+2	24					Only for students who are able to graduate
Specific courses (26 ECTS)							
Aircraft performance and stability	1	4					
Aircraft propulsion	1	5					
Applied Computational Fluid Dynamics	1	3					
Avionics	2	3					
Aircraft conceptual design	2	5					
Damage testing in aeronautics	2	3					
Technology of the aerospace industry	1+2	3					

Elective courses (10 ECTS)							
Internship 40 days	1	6					
Internship 60 days	1	10					
Wind turbine aerodynamics and design	1	4					
Advances computational structural mechanics	1	4					
Aircraft systems	1	4					
Optimization-based control design	1	4					
Helicopters	2	3					
Model-based and data-driven fault detection and isolation	2	4					
Experimental fluid mechanics	2	3					
Technological business development project - EUTOPIA learning unit	1+2	3					
Numerical methods							
Monte carlo methods							
Advanced reactor multi physics							
Nuclear measurement techniques							
Naval robotics							
Composite structures							
Microfabrication techniques							
Aircraft specification							

MODULE ENERGY: YEAR 1 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Compulsory common core (19 ECTS)							
Control system design	1	5					
Design methodology	1	5					
Data-driven engineering	2	4					
Turbomachinery	2	5					
Compulsory partially common core (7 ECTS)							
Piston engines	1	3					
Fuel cells and batteries	1	4					
Project (5 ECTS)							
Project in electromechanical engineering	1+2	5					
Development cooperation project	1+2	5					
Team leader project	1+2	5					
Eco-marathon project	1+2	5					
Specific courses (24 ECTS)							
Electric power systems 1	1	5					
Multi-physics modelling and simulation	1	4					
Sustainable energy	1	3					
Heating, ventilation and air conditioning	2	3					

Heat transfer and conbustion	2	4					
Nuclear energy and reactors	2	5					

VRIJE UNIVERSITEIT BRUSSEL

MODULE ENERGY: YEAR 2 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Master thesis	1+2	24					Only for students who are able to graduate
Compulsory common core (3 ECTS)							
Reliability and safety	1	3					
Specific courses (16 ECTS)							
Electric traction	1	3					
Renewable energy technology	1	4					
Thermal power plants	2	4					
Energy policy and management	1+2	5					
Elective courses (17 ECTS)							
Internship 40 days	1	6					
Internship 60 days	1	10					
Design and control of electrical machines	1	3					
Wind turbine aerodynamics and design	1	4					
Risk-based methodologies for energy systems	2	4					
Advances internal combustion engines	2	3					
Electric power systems 2	2	5					
Model-based and data-driven fault detection and isolation	2	4					
Operation, control and safety of nuclear power systems	2	5					
Numerical methods							
Monte carlo methods							
Advanced reactor multi physics							
Nuclear measurement techniques							
Naval robotics							
Composite structures							
Microfabrication techniques							
Aircraft specification							
Nuclear measurement techniques							
Naval robotics							
Composite structures							
Microfabrication techniques							
Aircraft specification							
Microfabrication techniques							
Aircraft specification							
Turbomachinery	2	3					
Composite structures	2	3					
Compulsory partially common core (10 ECTS)							
Structural analysis and finite elements	1	5					

Mechanical vibrations	1	5					
Project (5 ECTS)							
Project in electromechanical engineering	1+2	5					
Development cooperation project	1+2	5					
Team leader project	1+2	5					
Eco-marathon project	1+2	5					
Specific courses (23 ECTS)							
Mechatronics 1	1	5					
Industrial automation	1	3					
Robotics 1	2	5					
Real time computer systems	2	5					
Machine elements	2	5					

MODULE ROBOTICS AND MECHANICAL CONSTRUCTION: YEAR 2 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Master thesis	1+2	24					Only for students who are able to graduate
Compulsory partially common core (6 ECTS)							
Reliability and safety	1	3					
Specific courses (13 ECTS)							
Robotics 2	1	4					
Manufacturing technology 1	1	3					
Manufacturing technology 2	2	3					
Mechatronics 2	2	3					
Elective courses (17 ECTS)							
Internship 40 days	1	6					
Internship 60 days	1	10					
Design and control of electrical machines	1	3					
Multibody mechanics	1	3					
Business management and entrepreneurship	1	3					
Optimization-based control design	1	4					
Theory and practice of advanced control	2	4					
Active medical devices	2	5					
case studies with composite materials	1+2	3					
Technological business development project - EUTOPIA learning unit	1+2	3					
Micro- and nanofabrication	1	3					
Soft microrobotics	1+2	5					
Numerical methods							
Monte carlo methods							
Advanced reactor multi physics							
Nuclear measurement techniques							
Naval robotics							
Composite structures							
Microfabrication techniques							
Aircraft specification							

MODULE SUSTAINABLE TRANSPORT AND AUTOMOTIVE ENGINEERING: YEAR 1 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Compulsory common core (22 ECTS)							
Control system design	1	5					
Design methodology	1	5					
Data-driven engineering	2	4					
Electrical drives	2	5					
Turbomachinery	2	3					
Composite structures	2	3					
Compulsory partially common core (13 ECTS)							
Piston engines	1	3					
Structural analysis and finite elements	1	5					

Mechanical vibrations	1	5					
Project (5 ECTS)							
Project in electromechanical engineering	1+2	5					
Development cooperation project	1+2	5					
Team leader project	1+2	5					
Eco-marathon project	1+2	5					

Specific courses (20 ECTS)							
Vehicle dynamics and kinematics	1	4					
Sustainable mobility and logistics	1	3					
Electric and hybrid vehicule traction	2	4					
Vehicle aerodynamics	2	3					
Sustainble Energy	1	3					
Technological Business Development - EUTOPIA learning Unit	1+2	3					
MODULE SUSTAINABLE TRANSPORT AND AUTOMOTIVE ENGINEERING: YEAR 2 (60 ECTS)							
Course title	**Sem**	**ECTS**	**Binding prerequisite**	**Advisory prerequisite**	**Binding corequisite**	**Advisory corequisite**	**Additional requirements**
Master thesis	1+2	24					Only for students who are able to graduate
Compulsory partially common core (7 ECTS)							
Fuel cells and batteries	1	4					
Specific courses (9 ECTS)							
Vehicle electronics	1	6					
Advances internal combustion engines	2	3					
Elective courses (20 ECTS)							
Internship 40 days	1	6					
Internship 60 days	1	10					
Automotive standardization	1	3					
Machine learning	1	6					
Entrepreneurship	1	3					
Operations management	1	6					
Sustainability: an interdisciplinary approach	1	6					
Business aspects of technology: factory of the future	1	3					
Supply chain management	2	6					
Experimental fluid mechanics	2	3					
Technological business development project - EUTOPIA learning unit	1+2	3					
Case study with composite materials	1+2	3					
Numerical methods							
Monte carlo methods							
Advanced reactor multi physics							
Nuclear measurement techniques							
Naval robotics							
Composite structures							
Microfabrication techniques							
Aircraft specification							