

## Admission Requirements

- i. Bachelor's Degree or equivalent, in engineering or engineering technology with a minimum CGPA of 2.750 ; or
- ii. Bachelor's Degree or equivalent, in engineering or engineering technology with a CGPA of 2.500 – 2.749 must have a minimum of 3 years of work experience in a related field ; or
- iii. Bachelor's Degree or equivalent, in engineering or engineering technology with a CGPA of 2.250 – 2.449 must have a minimum of 5 years of work experience in a related field ; or
- iv. Bachelor's Degree or equivalent, in science and technology with a minimum CGPA of 3.000 ; or
- v. Bachelor's Degree or equivalent, in science and technology with a minimum CGPA of 2.750 – 2.999 must have a minimum of 3 years of work experience in a related field; or
- vi. Bachelor's Degree or equivalent, in science and technology with a minimum CGPA of 2.500 – 2.749 must have a minimum of 5 years of work experience in a related field.

*Note: Admission of candidates with Bachelor of Science or Technology degrees or their equivalents need to take prerequisite modules in Engineering to adequately prepare them for their advanced study.*

## Language Requirements

International candidates are required to fulfill English language requirement as follows:

- a) 550 for TOEFL Paper-based Test (Academic Version); or
- b) Band 6.0 for IELTS (Academic Training); or
- c) 79-80 for TOEFL Internet-based Test (Academic Version).

Candidate without the requisite minimum score for TOEFL or IELTS may be granted a provisional admission. Such candidate will be required to pass an English Placement Test conducted by the University.



## APPLICATION

Please apply online via:

<http://sgsportal.upm.edu.my:8080/sgsportal>  
[www.sgs.upm.edu.my/prospective\\_students-2964](http://www.sgs.upm.edu.my/prospective_students-2964)

For further information, please contact :

### DEAN

Faculty of Engineering  
 Universiti Putra Malaysia  
 43400 UPM Serdang  
 Selangor Darul Ehsan  
 Malaysia

Tel: (603) 9769 6262/6253

Email : dean.eng@upm.edu.my

Website: www.eng.upm.edu.my

[www.facebook.com/engineeringupm](https://www.facebook.com/engineeringupm)

### PROGRAMME COORDINATOR

**Dr. Syamimi Saadon**

Department of Aerospace Engineering  
 Faculty of Engineering  
 Universiti Putra Malaysia  
 43400 UPM Serdang  
 Selangor Darul Ehsan, Malaysia

Tel: (603) 9769 6405/6401

Email: mimisaadon@upm.edu.my

Website: [www.eng.upm.edu.my/academic/postgraduate/master\\_by\\_coursework-2294](http://www.eng.upm.edu.my/academic/postgraduate/master_by_coursework-2294)



# MASTER IN AEROSPACE SYSTEM DESIGN ENGINEERING

Department of Aerospace Engineering  
 Faculty of Engineering, Universiti Putra Malaysia

[facebook.com/UniPutraMalaysia](https://www.facebook.com/UniPutraMalaysia) [@putramalaysia](https://www.instagram.com/putramalaysia)

[instagram.com/uniputramalaysia](https://www.instagram.com/uniputramalaysia) [youtube.com/user/bppupm](https://www.youtube.com/user/bppupm)

[www.upm.edu.my](http://www.upm.edu.my)

AGRICULTURE • INNOVATION • LIFE

BERILMU BERBAKTI  
 WITH KNOWLEDGE WE SERVE

Fees	Master without thesis	
	Malaysian Student	International Student
Basic Fees (1 <sup>st</sup> semester)	RM1,425	RM2,475
Basic Fees (2 <sup>nd</sup> and subsequent semester)	RM1,175	RM2,225
Credit Fees * subject to change	RM370 /credit	RM450 /credit

## INTRODUCTION

The Master of Aerospace System Design Engineering (MASDE) programme is specifically designed to prepare you for a professional future leading large, complex projects in aerospace engineering. Through extensive courses and research projects, you will master cutting-edge aerospace engineering methodologies and apply them to real-world issues. Furthermore, earning the necessary skills to bring your ideas to reality. UPM, ranked in the QS top 200 universities, offers a one-of-a-kind coursework Master programme in Malaysia, encompassing both aeronautics and astronautics. In addition, through collaborations with Malaysia Airline Berhad, you will have the opportunity to be on-site for observing and capturing Engineering data for research purposes and aid further development.

## Credit Requirement

### Credit Requirements for Graduation

Students enrolling under this programme must fulfill 40 credits of coursework to graduate. The credit distributions for compulsory courses, elective courses and dissertation are as follows:

■ Compulsory Courses	24 credits
■ Elective Courses	6 credits
■ Dissertation	10 credits

### Compulsory Courses

Students must take all the listed compulsory courses;

EAS5100	Research Methodology	3 credits
EAS5108	Aerospace Quality and Project Management	3 credits
EAS5205	Aircraft Flight Performance	3 credits
EAS5303	Guidance, Navigation and Control	3 credits
EAS5502	Aircraft Propulsion	3 credits
EAS5408	Aerospace Structures	3 credits
EAS5707	Aircraft System Design and Integration	3 credits
EAS5901	Aerospace Design Lab	3 credits
EAS5990	Dissertation	10 credits

**Note : EAS5990 - Dissertation is carried out over two semesters (3+7 credits)**

### Elective Courses

Students must take only two elective courses (6 credits) out of the listed

EAS5201	Computational Fluid Dynamics	3 credits
EAS5403	Finite Element Analysis	3 credits
EAS5409	Aerospace Composites	3 credits
EAS5602	Avionics	3 credits
EAS5706	Design Optimization Techniques	3 credits
EAS5805	Space Mission and Systems Engineering	3 credits
EAS5955	Special Topic	3 credits

## Course Synopsis

### EAS5100 | Research Methodology | 3 Credits

This course covers best practices in research such as research methodology, design and ethics, thesis writing and oral presentations.

### EAS5108 | Aerospace Quality and Project Management | 3 Credits

This course covers an introduction to aerospace industry management. This includes the principle, standard and compliance, marketing, operational, and risk management in the aerospace industry.

### EAS5205 | Aircraft Flight Performance | 3 Credits

This course aims to reinforce fundamental aerodynamics principles in determining the performance of fixed- and rotary-wing aircraft. Flow along aerodynamic surfaces will be analyzed leading to flight performance across a designated mission profile.

### EAS5303 | Guidance, Navigation and Control | 3 Credits

This course covers the analysis on stability, controllability, and observability of an aircraft systems. This includes an introduction to the inertial and satellite navigation systems, advanced design techniques and development of integrated aircraft navigation systems.

### EAS5502 | Aircraft Propulsion | 3 Credits

The course covers the theory and design of air breathing engine. Topics include the components in air breathing engine, functions, design parameters, energy transfer and prediction of performance. Components matching and effect of environment from the air breathing engines are also covered.

### EAS5408 | Aerospace Structures | 3 Credits

This course covers aerospace materials and structures. Emphasis is on the stress analysis, instability, fatigue, failure theories and aeroelasticity of aerospace structures.

### EAS5717 | Aircraft System Design and Integration | 3 Credits

This course provides an overview of the primary subsystems for aircraft system and also its integration. This includes conducting system engineering study on the aircraft system, identifying the functional and physical relationships between subsystems and establishing aircraft design requirements.

### EAS5901 | Aerospace Design Lab | 3 Credits

This course covers design, fabrication, integration and technology implementation of an unmanned aerial vehicle (UAV) system for a given specific mission requirement. The design project includes market study, project planning, cost analysis, system modeling and simulation, prototype development and testing.

### EAS5990 | Dissertation | 10 Credits

This course involves a research or study by a student on a specific topic. It covers literature, methodology, data collection and analysis under a supervision of a lecturer. A proposal report needs to be prepared at the beginning of the study. At the end of the project, the student will submit a complete dissertation and research output for evaluation. The student is also required to present the findings of the study to a panel of assessors.

### EAS5201 | Computational Fluid Dynamics | 3 Credits

This course covers the methods of computational fluid dynamics and its use in design. Emphasis is given to solving skills of fluid motion equations and skills using advanced techniques in design involving heat transfer and engineering model development for product design.

### EAS5403 | Finite Element Analysis | 3 Credits

This course covers the formulation of finite element equations to solve problems related to the resilience of a design. Emphasis is given on various theories of failure in product structure and skills analyzing 2D and 3D stress-strain problems.

### EAS5409 | Aerospace Composites | 3 Credits

This course presents a comprehensive overview of the concepts of composite materials, its basic constituents, types, strength and failures of composites with considerations on the composite design, processing and testing requirements. This includes advanced composite materials and issues on environmental effects and sustainability will also be discussed.

### EAS5602 | Avionics | 3 Credits

This course covers the mathematics primer of avionics, aircraft electricity and electronics, and system interface. This includes introduction to the communications, radar, electro-optics (EO) systems, sensors, air data systems and advanced systems.

### EAS5716 | Design Optimization Techniques | 3 Credits

This course covers the principles and concepts of classical and modern engineering design optimization methods. This includes linear and nonlinear programming, heuristic optimization techniques, and multi-objective and multi-disciplinary design optimization.

### EAS805 | Space Mission and Systems Engineering | 3 Credits

This course presents a comprehensive overview of spacecraft systems and space mission design. This includes project management and the economic and political factors that affect space missions, especially in the national context. Specific space mission designs are developed in teams.

### EAS5955 | Special Topic | 3 Credits

This course deals with selected innovation and engineering design fields according to current development. The studies will be based on topics that are determined by the appointed lecturer. The course emphasises knowledge seeking pertaining to the topic and producing technical report in terms of writing and oral: individually and/or in group.