Cranfield's SpaceMaster – Second Year Options Dr Peter Roberts



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About Cranfield's SpaceMaster



- You will join 20-25 students on the MSc in Astronautics and Space Engineering and share modules from this course (click <u>here</u> for more details)
- Cranfield University as a whole is involved in space missions such as James Webb Space Telescope, ExoMars and Darwin



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About Cranfield University

- Cranfield is the only university in the UK to have its own airfield.
- A significant amount of our funding comes from research and consultancy, with only 14% from central government.
- We are one of the top five research-intensive universities in the UK, alongside Oxford, Cambridge and London's Imperial College.
- 54% of all aerospace engineering postgraduates in the UK graduate at Cranfield. 94% of our students go on to relevant work or further study within 6 months of graduation.



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About Cranfield University

- With only 2,000 students, Cranfield is a close-knit campus, offering a focused and mature atmosphere.
- Cultural diversity characterises Cranfield

 students representing over 100 of the world's nationalities come to study here.
- In the current Times Higher World University Rankings Cranfield's top achievements included being ranked:
 - Second in the UK and the World in the international student category
 - Top in the UK for staff to student ratio, taking 6th place in the World



Dynamics and Control of Systems and Structures – 2nd year modules



Component	Module Name	ECTS Credits
Compulsory Module	Space Propulsion	5
Option Modules (2 must be taken)	Classical Control Engineering	5
	Multivariable Control for Aerospace	5
	Finite Element Methods	5
	Design and Analysis of Composite Structures	5
	GPS & INS with Sensors and Data Fusion	5
Individual Research Project	Examined by written thesis	45

Dynamics and Control of Systems and Structures – Additional modules not directly assessed

- Launch and Reentry Aerodynamics
- Environmental Control and Life Support
- Modelling of Dynamic Systems
- Introduction to Aerospace Structures
- Payload Engineering and Instrumentation
- Research Skills
- Introduction to Spacecraft Operations
- Spacecraft Attitude Dynamics and Control
- Structural Mechanics and Dynamics
- Impact Dynamics and Spacecraft Protection
- Software skills: Satellite Tool Kit, MATLAB/Simulink, CAD (CATIA), Thermal Analysis (ESATAN), Structural Analysis (NASTRAN/PATRAN)







For more information....

- Cranfield University
 - www.cranfield.ac.uk
- Cranfield's Space Research Centre
 - <u>www.cranfield.ac.uk/soe/space</u>
- Cranfield's MSc in Astronautics and Space Engineering
 - <u>http://www.cranfield.ac.uk/soe/postgraduatestudy/astronautics/index.jsp</u>
- Information on Cranfield's involvement in space:
 - Darwin: <u>Article from "The Engineer"</u>
 - JWST: Article from "Business Weekly"
 - ExoMars & BioPan: Article from "Business Weekly"