



MODULE SPECIFICATION

Part 1: Information			
Module Title	Stress Analysis		
Module Code	UFMFQA-15-2	Level	Level 5
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	Stress & Dynamics 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Educational Aims: One of the key disciplines that underpin mechanical engineering is introduced in this module and supported by practical laboratory exercises. This foundation of knowledge presented here will be used to extend specialist knowledge in future years.</p> <p>Outline Syllabus: Stress Analysis:</p> <p>Stress Concentration</p> <p>Un-symmetric bending</p> <p>Curved beams</p> <p>Bending of composite beams</p> <p>Torsion (non-circular cross sections)</p>

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<p>Elementary elastic plastic analysis</p> <p>Buckling of struts</p> <p>Beams deflections</p> <p>Mohr's Circle for stress and strain</p> <p>Rosette analysis</p> <p>Failure criteria for ductile and brittle materials</p> <p>Experimental Stress Analysis:</p> <p>Torsion (non-circular cross sections), Buckling of struts, Beams deflections, Rosette analysis, Un-symmetric bending, Curved beams</p> <p>Teaching and Learning Methods: Large group lecture supported by small tutorials and laboratory sessions. Study time outside of contact hours will be spent on going through exercises and example problems.</p> <p>Lab sessions (Group work) will provide experience of empirical methods and comparison with theoretical analysis</p> <p>Scheduled learning includes lectures, tutorials and lab sessions.</p> <p>Independent learning includes hours engaged with essential reading, assignment preparation and completion.</p>

Part 3: Assessment

Component A: Exam

Assessed via end of semester Exam to assess the students understanding of concepts and techniques.

Component B: A series of online e-assessment tests to encourage engagement and provide formative feedback.

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	75 %	Online Exam
Online Assignment - Component B		25 %	Online tests
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	75 %	Online Exam
Online Assignment - Component B		25 %	e-assessment

Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:
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	Module Learning Outcomes		Reference
	Show a detailed knowledge and understanding of theoretical and experimental Stress analysis and structural behaviour with regard to the standard engineering components and artefacts.		MO1
	Demonstrate subject specific skills with respect to solving complex problems in the general stress analysis of realistic engineering components and understand the design principles involved.		MO2
	Select, apply and evaluate advanced stress analysis techniques for a wide range of engineering problems.		MO3
	Demonstrate a comprehensive understanding of analytical and experimental methods for the solution of strength and stiffness.		MO4
	Demonstrate a comprehensive understanding of structures subjected to a variety of load types and be able to predict modes of failure.		MO5
	Model and simplify real problems, and apply mathematical methods of analysis.		MO6
Contact Hours	Independent Study Hours:		
	Independent study/self-guided study		114
	Total Independent Study Hours:		114
	Scheduled Learning and Teaching Hours:		
	Face-to-face learning		36
	Total Scheduled Learning and Teaching Hours:		36
	Hours to be allocated		150
	Allocated Hours		150
Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/modules/ufmfqa-15-2.html</p>		

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Aerospace Engineering (Design) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-20

Aerospace Engineering (Design) [Sep][FT][Frenchay][4yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][SW][Frenchay][5yrs] MEng 2019-20

Aerospace Engineering with Pilot Studies (Design) [Sep][FT][Frenchay][4yrs] MEng 2019-20

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Aerospace Engineering (Design) [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20
Aerospace Engineering (Design) [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-20
Mechanical Engineering and Vehicle Technology [Feb][FT][GCET][4yrs] BEng (Hons) 2018-19
Mechanical Engineering [Sep][PT][UCW][3yrs] FdSc 2018-19
Mechanical Engineering and Vehicle Technology [Oct][FT][GCET][4yrs] BEng (Hons) 2018-19
Aerospace Engineering with Pilot Studies (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19
Mechanical Engineering [Sep][PT][BTC][3yrs] FdSc 2018-19
Mechanical Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng 2018-19
Mechanical Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng 2018-19
Mechanical Engineering {Foundation} [Sep][FT][Frenchay][5yrs] MEng 2018-19
Mechanical Engineering {Foundation} [Sep][SW][Frenchay][6yrs] MEng 2018-19
Aerospace Engineering with Pilot Studies (Design) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19
Aerospace Engineering (Design) {Apprenticeship} [Sep][PT][COBC][4yrs] BEng (Hons) 2018-19
Aerospace Engineering (Design) {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19
Aerospace Engineering (Design) {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19
Mechanical Engineering {Apprenticeship} [Sep][PT][UCW][3yrs] FdSc 2018-19
Aerospace Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20
Aerospace Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20
Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][5yrs] MEng 2019-20
Aerospace Engineering with Pilot Studies [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-20
Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20
Aerospace Engineering with Pilot Studies [Sep][FT][Frenchay][4yrs] MEng 2019-20
Aerospace Engineering [Sep][FT][Frenchay][4yrs] MEng 2019-20
Aerospace Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-20
Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19
Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19
Aerospace Engineering with Pilot Studies {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20
Aerospace Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20