

MODULE DESCRIPTOR

Guidelines for completion are available¹ as are Red Guides on developing a new module and Delivering a module².

1. Module Code	MSDE 423	2. Title of new module	Capstone Design II
3. Subject Division <i>where relevant</i>	Engineering		
4. Module level <i>4, 5, 6 etc.</i>	6	5. Module Tutor	Dong Young Jang
6. Credit points <i>10, 20,30 etc</i>	20	7. Year long or semester based	Semester 1

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11. Indicative reading list or other learning resources (SITS 0002)

<p>1. Recommendations for purchase by students</p> <p>N/A</p> <p>2. Books</p> <p>1. Shigley's Mechanical Engineering Design, Richard G. Budynas and J. Keith Nisbett, 8th Edition, 2008</p> <p>2) <i>Product Design and Development</i> by Karl T. Ulrich and Steven D. Eppinger (McGraw-Hill 2008)</p> <p>3) <i>Machine Design An Integrated Approach</i>, Robert Norton, Prentice Hall, 2008.</p> <p>3. Journal Articles</p> <p>N/A</p> <p>4. Journals and Newspaper Titles</p> <p>N/A</p> <p>5. Databases and Websites</p> <p>N/A</p> <p>6. Any Other Resources</p> <p>N/A</p>

¹ <http://northumbria.ac.uk/sd/central/ar/qualitysupport/approval/forms/>

² <http://northumbria.ac.uk/sd/central/library/marcel/redguides/browse/?view=Standard>

12. Outline syllabus (SITS 0003)

A list of module contents

Each student submits a proposal for an investigation he/she would like to undertake. Where appropriate this may be a continuation of work undertaken during supervised work experience or suggested by the employer. On approval an appropriate supervisor is allocated. The supervisor may offer suggestions but the responsibility for determining the direction of the work and the progress lies with the student.

An integral part of the project is the report which should:

1. Describe the purpose of the investigation.
2. Summarize the literature search and present an analysis of the findings.
3. Describe the work done and clearly explain the logic behind the decisions and choices made.
4. Present the results obtained.
5. Critically review both the approach adopted and the results achieved.
6. State any definite conclusions reached.

A poster display shall be produced to assist the examiners in arriving at an appropriate classification of the achievement.

13. Aims of module (SITS 0004)

Broad statement of educational intent and overall purpose of module

This module aims to introduce students to the principles of successful engineering design and to guide students through a practical design experience. It also provides experience of undertaking a complete group design project, allowing them to understand their individual nature within a group when undertaking a significant investigation.

14. Learning outcomes (SITS 0005)

State what expected to know and/or be able to do at end of module

Upon completion of this module the student will be able to :

1. Manufacturing Science with advanced work in Process Technology and Manufacturing Systems (A1).
2. Mathematical methods relevant to the Engineering subjects covered (A2).
3. Select engineering materials for cost effective performance (A3)
4. Apply the principles of design and techniques to develop products and related manufacturing processes. (B2)
5. Design a component, system or process and demonstrate its feasibility through testing or simulation (C5)
6. Apply an engineering approach to the solution of problems using scientific principles (D2).
7. Use creativity and, where appropriate, innovate in problem solving. (D3)
8. Understand the importance of teamwork, leadership and negotiation skills (D4)

15. Pre-requisite(s) (SITS 0006)

Any module which must already have been taken at a lower level, or any stipulated level of prior knowledge required

MSDE 422 Capstone Design I

16. Co-requisite(s) (SITS 0007)

Modules at this level which must be taken with this module

None

17. Distance learning delivery (SITS 0008)

*If the module is offered (wholly or in part) by distance learning, please give detail of delivery arrangements and the specific resources required
e.g. materials, communication facilities, hardware, software etc.*

N/A

18. Learning and teaching strategy (SITS Module Descriptor Sequence 0009)

This module will be delivered using a combination of seminars by individual instructors, set work and presentations, and independent individual learning. Students work as a team to form a design solution to a problem or concept they have chosen. Their supervisor plays a supporting role, however students are primarily responsible for how they carry out the work and managing their project. Presentations throughout the semester and the final report are group activities whilst each individual student must provide a weekly activity log to help them gauge their own progress and input.

19. Assessment and feedback strategy (SITS Module Descriptor Sequence 0010)

Please provide details of assessment (formative and summative) and indicate how students will be provided with feedback on their performance. (A breakdown of summative tasks is also provided in section 23.) If the module or an assessment component is exempt from the Anonymous Marking Policy please indicate this below.

a. Summative assessment and rationale for tasks

Individual weekly progress logs on the project worth 10% provide students with the opportunity to gauge their progress and reinforce their understanding of the capstone design process. The log should include materials discussed with their project advisors. Three presentations for the progress check to the MSDE program faculty worth 30% are used to evaluate and summarize the project progress and also to help in redirecting projects through consideration of faculty comments. The final project report worth 50% offers students the chance to logically evaluate their product and understand the project as a whole from design to manufacturing. Writing the project reports will be a good opportunity to practice formal report writing and to summarize the whole capstone design process.

b. Additional formative assessment – detail of process and rationale

Scheme of the formative assessments on the weekly reports, presentations and final reports on each design project will be provided to the students at the beginning of semester for their preparation. Verbal feedback during the presentations and weekly meeting with their advisors will be given to each design projects and each design group must consider the feedbacks for their weekly reports, presentations, and final reports.

c. Indication of how students will get feedback and how this will support their learning

Feedback will be in the form of verbal (formative) during the presentations and summative feedback will be via written comments on the pre-reports before formal reports.

20. Implications for Choice (SITS Module Descriptor Sequence 0011)

Possible follow-on modules, or exclusions, or modules which require this one as a pre-requisite

None

21. Notional Student Workload (NSW) for each mode of delivery

(SITS Module Descriptor Sequence 0012)

Complete a separate table where the distribution of NSW differs for a particular delivery pattern - **Mode of Delivery FT**

Activity type*	Hours	KIS category	KIS category hours
Lecture		Scheduled	
Seminar	20		
Tutorial	40		
Project Supervision			
Demonstration			
Practical classes and workshops	40		
Supervised time in studio/ workshop			
Fieldwork			
External visits			
Work based learning			
Guided independent study	100	Independent	
Placement		Placement	
Year abroad			
Total workload <i>200 hours for 20 credit module, 100 for 10 credit module etc.)</i>	200		

SUMMATIVE ASSESSMENT

22. Form of Reassessment

Either synoptic or non-synoptic reassessment

	Y/N
Synoptic reassessment <i>One form of reassessment that tests all module learning outcomes</i>	Y
Non-synoptic reassessment <i>Where module referred overall, individual failed components of assessment are reassessed</i>	

23. Component Assessment

To be completed for each component of assessment

Sequence <i>001, 002 etc.</i>	Activity type ³ <i>indicate ONE of the following types: AO Attendance only CP Clinical Placement CW Coursework EXAM PRE Presentation</i>	Brief description of assessment <i>e.g. type/ length of exam, type/ word limit of coursework</i>	Weighting <i>% or Pass/Fail (for grade only components) Note: % weightings should add up to 100% for module overall</i>	Final assessment Y/N
001	PRE	3 Progress Presentations (10min each)	30	
002	CW	Final presentation (15min) dissertation (around 10000 words)	50	Y
003	CW	Weekly log	20	

³ For KIS reporting, CP and PRE will be aggregated together as 'Practical' assessment types

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24. Date of SLE Approval

25. Subject code
 This ensures that the correct area receives appropriate funding and should be completed in consultation with the School Registrar or nominee. Advice can also be sought from Financial Planning.

26. Module mark scheme assigned⁴

27.	Component mark scheme assigned³		
	<ul style="list-style-type: none"> • For each component listed in section 23 indicate the mark scheme attached. • Note that for synoptic mark schemes (ie MOD1, MOD3 and M50SY only) an additional component should be entered for the reassessment with sequence 900 and assessment type SYN. 		
	001		

28.	Date of entry onto SITS	
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29.	LOG OF CHANGES POST APPROVAL			
	<i>Please indicate any changes to the approved module descriptor from 2012/13 onwards</i>			
	Section No.	Brief description of change	Date of approval	Semester and year of first implementation

³A list of marking schemes (module and component) can be accessed from <http://northumbria.ac.uk/sd/central/ar/qualitysupport/approval/forms/>