INTEGRATED ENGINEERING STUDIES 1

SHE Level	1		
SCQF Credit Poir	nts20.00		
ECTS Credit Poin	ts10.00		
Module Code	M1H624329		
Module Leader	Sinan Sinanovic		
School	School of Engineering and Built Environment		
Subject	Audio and Electronic Engineering		
Trimesters	• B (January start)		
	• A (September start)		

C (May start)

Summary of Content

This module focusses on project work concerned with the development of an engineering solution to a realistic problem relevant to the domain of the student's programme of study. The module will involve the utilisation of the knowledge and skills developed throughout the student's current level of study in producing an appropriate solution. The emphasis of this module is on understanding the design process and appraising design. The balance of analysis, design and implementation will depend on the specific objectives of the problem topic but the problem is intended to provide design and analysis problems that help further develop the student's insight into the engineering profession, the roles of the engineer and the frameworks within which the modern engineer operates. It is a group-based project and the work completed within this module by an individual student will require the student to work with other students following the same module. The groups are expected to follow a project plan under direct supervision from a module tutor and work in a self-motivated way within defined schedules and develop a confidence in their ability to work with others and creatively solving problems. This module will ground students in team building and team working skills and further develop the student awareness of and ability to identify professional issues relevant to the engineering discipline area and the societal context of engineering practice.

Syllabus

-360 - Project Management Principles: Project deliverables and milestones; Scheduling of project tasks; Project monitoring and review activities; Team working and team building - Independent working and self-reliance; Personal reflection and review; Communication skills - Design Principles for Technology based products and systems - Invention, Innovation and Improvement: continuous improvement and innovation cycles - Understanding the design challenge, the dimensions of product design; what constitutes "good design"? - Process stages: need; investigation and problem formulation; design specification; concept generation and evaluation; concept development; detailed design; production sales; user feedback; product life cycles - Understanding principles of design for sustainability: key concepts of sustainable development (limits to growth, ecological footprints, sustainable consumption); appreciation of the commercial, legislative and social motivation for practising sustainable development - The role and scope of applicable legislation, codes of practice and industry standards - Introduction to ethical considerations relevant to engineering and in the modern world and examples of ethical issues faced by the engineering profession - Introduction to

ethical practices: codes of conduct, obligations to the public, duty of care, trust - Introduction to career planning skills

Learning Outcomes

On completion of this module, students should be able to:- Follow a project plan within a team to carry out the development of a practical and realistic problem relevant to the design and development of products or systems.- Develop skills and prepare for a career in engineering- Use relevant technical and professional skills, techniques and practices in the development of a problem solution- Develop and demonstrate appropriate competence in, and an understanding of the roles and transferable skills required in the project's development- Demonstrate information gathering and enquiry skills appropriate to their programme level- Demonstrate the ability to report upon the project in a written and oral form- Understand key concepts of, and the motivations for, sustainable development-Develop an awareness of ethical, professional and sustainability issues and identify those which apply within the context of the project- Put their engineering education in context and understand and reflect on the skills and attributes that are being developed through academic study and work experience

Teaching / Learning Strategy

The course material and overall project guidance approach will be introduced through lectures and seminars to present a consistent and logical progression of issues and concepts such as project management, design, market analysis, ethics and sustainability. The project will encourage students to innovate and enterprise through development of their own solutions to a real world problem drawing on a range of various ideas from different contexts and discipline areas. The tutorials will be used as project supervision and monitoring sessions with each individual project group, and for the explanation and elaboration of the lecture and seminar material and overall project guidance and support. Guest lectures from industry based sources will be utilised to bring the innovation, enterprise and real-world perspective to the students. Additional, essential, practical and career skills will be provided through a number of lab demonstration and practice sessions. Much of the student's independent learning is expected to be spent in team based situations developing elements of the problem solution via collaborative learning. Class material will be expanded upon using GCU Learn to ensure student support, information sharing and personalised learning. Students are provided with feedback via a variety of mechanisms, including during the meeting with their group supervisor. Feedback on coursework is provided within 3 working weeks of submission.

Indicative Reading

Berkun, S (2005) The Art of Project Management, O'Reilly Bruce, A & Langdon, K (2000) Project Management (Essential Managers), Dorling Kindersley Publishers Ltd Nokes, S et. al (2003) The Definitive Guide to Project Management: The Fast Track to Getting the Job Done on Time and on Budget, Financial Times Prentice Hall Portney, S (2010) Project Management for Dummies, Hungry Minds Inc West, M (2004) Effective Teamworking, BPS Blackwell Fleddermann, C(2008) Engineering Ethics, Prentice Hall Cross, N (1994), Engineering Design Methods, Wiley. Fiell C (2006) Industrial Design A-Z, Taschen Publishing Walker, S (2006) Sustainable by Design: Explorations in Theory and Practice, Gutenberg Press. Moran M (2005) Career Builders Toolkit, Cisco Press Prospects Web Site: www.prospects.ac.uk <http://www.prospects.ac.uk/> Inside Careers guide to the IT profession: (via) www.insidecareers.co.uk <http://www.insidecareers.co.uk/> ESkills Sector Careers: www.e-skills.com/careers <http://www.e-skills.com/careers>

Transferrable Skills

D2 Critical thinking and problem solving. D4 Communication skills, written, oral and listening. D6 Effective Information retrieval and research skills. D7 Computer literacy. D8 Self confidence, self discipline & self reliance (independent working). D9 Awareness of strengths and weaknesses. D12 Appreciating and desiring the need for continuing professional development. D13 Reliability, integrity, honesty and ethical awareness D15 Ability to prioritise tasks and time management (organising and planning work). D16 Interpersonal skills, team working and leadership. D17 Presentation skills. D18 Commercial awareness

Module Structure

Activity	Total Hours
Independent Learning (FT)	128.00
Lectures (FT)	12.00
Practicals (FT)	6.00
Assessment (FT)	18.00
Tutorials (FT)	12.00
Seminars (FT)	24.00

Component	Duration	Weighting	Threshold	Description
Coursework 2	n/a	20.00	n/a	Team Activity
Coursework 3	n/a	10.00	n/a	Individual Reflective Report (500 words)
Coursework 1	n/a	70.00	n/a	Final Group Submission (3000 words)

Assessment Methods