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| 4101MECH  Semester 1  *Mechanical Engineering* | Engineering Mathematics 1a  (20c) | *Aim:*  To provide a foundation in engineering mathematics for its application to the solution of engineering problems | *Learning activities:*  A combination of lectures and tutorials. | *Assessment:*  Online Assessment (100%) |
| 4103MECH  Semester 1  *Mechanical Engineering* | Applied Mechanics 1  (20c) | *Aim:*  To introduce the essential principles of applied mechanics | *Learning activities:*  Lectures and tutorials | *Assessment:*  VLE Based Test (40%) Exam (60%) |
| 4105MECH  Semester 1  *Mechanical Engineering* | Materials  (20c) | *Aim:*  The module will introduce the essential principles of material science. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (60%) VLE Based Test (40%) |
| 5102MECH  Semester 1  *Mechanical Engineering* | Engineering Mathematics 2  (10c) | *Aim:*  To provide a foundation in engineering mathematics for application to the solution of engineering problems | *Learning activities:*  A combination of lectures and tutorials | *Assessment:*  Online assessment (100%) |
| 5103MECH  Semester 1  *Mechanical Engineering* | Materials and Processes  (10c) | *Aim:*  To have a thorough understanding of the properties and applications of a range of structural engineering materials and their associated manufacturing processes. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (60%) Port (40%) |
| 5104MECH  Semester 1  *Mechanical Engineering* | Applied Mechanics 2  (20c) | *Aim:*  To provide the means for solving many basic engineering problems by learning the principles of mechanics for rigid and deformable solid bodies. | *Learning activities:*  Lectures and tutorials | *Assessment:*  Examination (60%) VLE Based Tests (40%) |
| 5107MECH  Semester 1  *Mechanical Engineering* | Engineering Practice 2  (20c) | *Aim:*  To enable students to develop the skills required to practice as a professional engineer. This module provides a broad range of experiences including laboratory's and report writing skills required of a professional engineer. | *Learning activities:*  A series of lectures, practical's (in the form of laboratory experiments) and tutorials. | *Assessment:*  Experimental Practice (60%) Literature Review (40%) |
| 6102MECH  Semester 1  *Mechanical Engineering* | Engineering Analysis  (20c) | *Aim:*  The module will introduce students to computational engineering analysis using finite element analysis (FEA) and computational fluid dynamics (CFD) and will extend their experience and skill with the aid of industry standard software. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Invigilated VLE Test (40%) VLE test with seen part (60%) |
| 6104MECH  Semester 1  *Mechanical Engineering* | Industrial Management  (20c) | *Aim:*  This module is designed to develop the core management techniques required to design, implement and plan a new product or process. | *Learning activities:*  Lectures and tutorials | *Assessment:*  Examination (70%) Coursework assignment (30%) |
| 6108MECH  Semester 1  *Mechanical Engineering* | Fluid Dynamics and Heat Transfer  (10c) | *Aim:*  To further develop the essential principles of Fluid Dynamics and Heat Transfer | *Learning activities:*  A combination of lectures, tutorials and practical sessions | *Assessment:*  Examination (70%) Portfolio (30%) |
| 6110MECH  Semester 1  *Mechanical Engineering* | Materials Engineering  (10c) | *Aim:*  To provide an in-depth understanding of advanced engineering materials together with techniques for material property and performance improvements. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Porfolio (30%) |
| 6112MECH  Semester 1  *Mechanical Engineering* | Manufacturing Processes and Industrial Automation  (10c) | *Aim:*  This module will deleiver a broad introduction to industrial automation, and cover policy and logistical considerations that drive process solutions. The participants will work on automation and assembly problems and cultivate a deep understanding of ele | *Learning activities:*  Series of lectures and tutorials supported by practical work. | *Assessment:*  Examination (70%) Portfolio (30%) |
| 6114MECH  Semester 1  *Mechanical Engineering* | Vehicle Dynamics  (20c) | *Aim:*  This module aims to provide Automotive engineers with specialist knowledge relating to the performance of road vehicles. It considers the motion of the vehicle in response to driver inputs, road load and propulsion forces. | *Learning activities:*  Lectures, tutorials and demonstrations using software, or in a laboratory | *Assessment:*  Examination (70%) Portfolio (30%) |
| 6120MECH  Semester 1  *Mechanical Engineering* | Ship Construction and Management  (20c) | *Aim:*  The module aims to provide an understanding of the technologies and equipment used in modern ship construction, while also including aspects of the management of production processes. | *Learning activities:*  A combination of lectures, tutorials, and practical sessions, supported by a shipyard visit. | *Assessment:*  Examination (70%) Portfolio (30%) |
| 7003MSC  Semester 1  *Mechanical Engineering* | Finite Element Analysis  (10c) | *Aim:*  The module extends the students existing knowledge of the finite element method to an advanced level. Whilst the theoretical aspects of the method will be covered in lectures the module is intended to be practical in nature with students having the opport | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Invigilated V.L.E Test (40%) FEA Project (60%) |
| 7005MSC  Semester 1  *Mechanical Engineering* | Alternative Energy Systems  (10c) | *Aim:*  The aim of this module is to provide a comprehensive introduction to alternative power generation systems. The module will review the environmental issues surrounding existing methods of power generation and concentrate alternative and renewable sources. | *Learning activities:*  A series of lectures. | *Assessment:*  Portfolio (100%) |
| 7006MSC  Semester 1  *Mechanical Engineering* | Advanced Materials Engineering  (10c) | *Aim:*  To develop a wide knowledge of advanced materials and to study the materials selection process involved in the design and manufacture of engineering products. | *Learning activities:*  A series of lectures supported by tutorials, seminars, case studies and practical laboratory work | *Assessment:*  Examination (70%) Materials Properties Selection (30%) |
| 7008MSC  Semester 1  *Mechanical Engineering* | Offshore Engineering  (20c) | *Aim:*  To provide advanced understanding of offshore installation types and knowledge of offshore installations from an operational and safety aspect. | *Learning activities:*  Formal lectures, Tutorials, Videos. | *Assessment:*  Exam (70%) Portfolio (30%) |
| 7009MSC  Semester 1  *Mechanical Engineering* | Maritime and Offshore Safety Analysis  (20c) | *Aim:*  To enable students to understand and implement the requirements of formal safety design, assessment and review in marine, offshore and port areas. | *Learning activities:*  By a combination of lectures and tutorials. | *Assessment:*  Examination (70%) Safety Analysis Report (30%) |
| 7010MSC  Semester 1  *Mechanical Engineering* | Manufacturing Processes Engineering  (10c) | *Aim:*  To provide a broad understanding of advanced manufacturing technologies and their applications. | *Learning activities:*  A combination of lectures, tutorials and practical sessions. | *Assessment:*  Examination (70%) Portfolio 1 (15%) Portfolio 2 (15%) |
| 7011MSC  Semester 1  *Mechanical Engineering* | Automation Systems  (10c) | *Aim:*  To have an awareness of relevant safety standards for Emergency Stop systems  To have an awareness of ATEX equipment and standards  To have an awareness of PLC Programming and Fieldbus standards  To research current developments in Automation by reviewing | *Learning activities:*  A series of lectures supported by tutorials including practical simulation activities. | *Assessment:*  Exam (70%) Report (30%) |
| 7015MSC  Semester 1  *Mechanical Engineering* | Project Management  (10c) | *Aim:*  To develop a sound understanding of the fundamental concepts of managing projects | *Learning activities:*  A programme of lectures supported by tutorials | *Assessment:*  Report (30%) Time Constrained Coursework (70%) |
| 7016MSC  Semester 1  *Mechanical Engineering* | Safety and Reliability  (10c) | *Aim:*  This module covers the application of modern risk management techniques for the identification, evaluation and control of the risk to enable improvements in the safety and reliability of engineering systems. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Report (30%) |
| 7035MECH  Semester 1  *Mechanical Engineering* | Maritime and Offshore Safety Analysis  (20c) | *Aim:*  To enable students to understand and implement the requirements of formal safety design, assessment and review in marine, offshore and port areas. | *Learning activities:*  By a combination of lectures and tutorials. | *Assessment:*  Examination (70%) Safety Analysis Report (30%) |
| 7106MECH  Semester 1  *Mechanical Engineering* | Marine Design Engineering  (20c) | *Aim:*  The aim the module is to provide students with the appropriate level of marine engineering knowledge and expertise required of an effective member of a marine engineering design team. | *Learning activities:*  Formal lectures, Tutorials, Videotapes. | *Assessment:*  Examination (70%) Portfolio (30%) |
| 7107MECH  Semester 1  *Mechanical Engineering* | Finite Element Analysis  (20c) | *Aim:*  The module extends the students existing knowledge of the finite element method to an advanced level. Whilst the theoretical aspects of the method will be covered in lectures the module is intended to be practical in nature with students having the opport | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Invigilated V.L.E Test (40%) FEA Project (60%) |
| 7108MECH  Semester 1  *Mechanical Engineering* | Conventional and Alternative Energy Systems  (20c) | *Aim:*  The aim of this module is to provide a comprehensive introduction to alternative and conventional power generation systems in the context of the UK energy distribution systems and associate energy markets.  The module will review the major issues associ | *Learning activities:*  A combination of lectures and tutorials. | *Assessment:*  Portfolio (100%) |
| 7109MECH  Semester 1  *Mechanical Engineering* | Offshore Engineering  (20c) | *Aim:*  To provide advanced understanding of offshore installation types and knowledge of offshore installations from an operational and safety aspect. | *Learning activities:*  Formal lectures, Tutorials, Videotapes. | *Assessment:*  Exam (70%) Portfolio (30%) |
| 7110MECH  Semester 1  *Mechanical Engineering* | Computational Fluid Dynamics  (20c) | *Aim:*  The module aims to explore the underlying theory of commercial computational fluid dynamics (CFD)  codes and to investigate their performance and reliability in engineering applications.  Whilst the theoretical aspects of the method will be covered in l | *Learning activities:*  Lectures, tutorial/practical CFD sessions, case studies and assignments. | *Assessment:*  Invigilated V.L.E Test (40%) CFD Project (60%) |
| 7111MECH  Semester 1  *Mechanical Engineering* | Advanced Materials and Manufacturing Processes  (20c) | *Aim:*  To provide a broad understanding of advanced materials, manufacturing technologies and their applications. | *Learning activities:*  A combination of lectures, tutorials and practical sessions. | *Assessment:*  Examination (70%) Portfolio 1 (30%) |
| 7112MECH  Semester 1  *Mechanical Engineering* | Structural Dynamics  (20c) | *Aim:*  The module is aimed at extending students’ knowledge of dynamics and applied finite element method to an advanced level. The module is intended to be practical in nature providing students with the skills to analyse and solve engineering dynamics problems | *Learning activities:*  Lectures, practical tutorials, laboratory experiment | *Assessment:*  VLE test (40%) FEA Project (60%) |
| 7113MECH  Semester 1  *Mechanical Engineering* | Additive Manufacturing Processes  (20c) | *Aim:*  To enable students to understand additive manufacturing processes, particularly those that contribute to the concept of “high value manufacturing”. | *Learning activities:*  The module delivery will incorporate lectures, tutorials and practical work. | *Assessment:*  Examination (70%) Porftolio (30%) |
| 7114MAN  Semester 1  *Mechanical Engineering* | Risk and Reliability  (20c) | *Aim:*  This module covers the application of modern risk management techniques for the identification, evaluation and control of the risk to enable improvements in the safety and reliability of engineering systems. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Coursework assignment (30%) |
| 7114MECH  Semester 1  *Mechanical Engineering* | Risk and Reliability  (20c) | *Aim:*  This module covers the application of modern risk management techniques for the identification, evaluation and control of the risk to enable improvements in the safety and reliability of engineering systems. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Coursework assignment (30%) |
| 7123MECH  Semester 1  *Mechanical Engineering* | Manufacturing Management  (20c) | *Aim:*  To deliver an understanding fundamentals of logistics activities, supply chain design, production planning, inventory control, and process modelling and control and the ways that supply chain management affects manufacturing from an operational perspectiv | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Coursework assignment (30%) |
| 6105MECH  Semester 1 & Semester 2  *Mechanical Engineering* | Marine Design and Propulsion  (20c) | *Aim:*  The module aims to analyse many of the critical marine systems associated with ships including aspects of safety within the marine industry | *Learning activities:*  A combination of lectures, tutorial, practical sessions supported by a ship visit. | *Assessment:*  Examination (70%) Portfolio (30%) |
| 4102MECH  Semester 2  *Mechanical Engineering* | Engineering Mathematics 1b  (20c) | *Aim:*  To provide a foundation in engineering mathematics for its application to the solution of engineering problems | *Learning activities:*  A combination of lectures and tutorials. | *Assessment:*  Online Assessment (100%) |
| 4104MECH  Semester 2  *Mechanical Engineering* | Thermodynamics and Fluid Mechanics 1  (20c) | *Aim:*  To introduce the essential principles of Thermodynamics and Fluid Mechanics | *Learning activities:*  A combination of lectures, tutorials and practical demonstrates. | *Assessment:*  Examination (60%) V.L.E. test (40%) |
| 5105MECH  Semester 2  *Mechanical Engineering* | Thermodynamics and Fluid Mechanics 2  (20c) | *Aim:*  To provide an insight into thermal plant cycles and the physical behaviour of fluid flow and heat transfer by application of the theory to practical engineering examples. | *Learning activities:*  A combination of lectures and tutorials. | *Assessment:*  Examination (60%) VLE Test (40%) |
| 5106MECH  Semester 2  *Mechanical Engineering* | Mechanical Engineering Design 2  (20c) | *Aim:*  This module aims to build on the skills developed in the Level 4 Engineering Practice 1 module by introducing systematic approaches to the design process and to the analysis of mechanical designs for the determination of strength and life. It will provide | *Learning activities:*  This module will be delivered through an integrated series of lectures supported by practical sessions. Students will undertake projects, both as individuals and in groups where they will apply what they have learned. | *Assessment:*  Guided Design Exercise 1 (50%) Guided Design Exercise 2 (50%) |
| 5108MECH  Semester 2  *Mechanical Engineering* | Mechatronics  (20c) | *Aim:*  To develop a practical understanding of how sensors and actuators may be used, along with embedded systems, to control and monitor mechanical engineering systems. | *Learning activities:*  Tutorial and Practical activities supported by on-line resources. | *Assessment:*  Practical assessments in a lab (100%) |
| 5110MECH  Semester 2  *Mechanical Engineering* | Marine Design and Technology  (20c) | *Aim:*  To provide a comprehensive introduction to Marine Engineering, Naval Architecture and Ship Construction, the module will concentrate on main and auxiliary propulsion systems, ship stability and construction features. | *Learning activities:*  A combination of lectures, tutorials, practical sessions supported by a ship visit. | *Assessment:*  Examination (60%) Portfolio (40%) |
| 6103MECH  Semester 2  *Mechanical Engineering* | Mechanical Engineering Design 3  (20c) | *Aim:*  This module will deliver a project based learning experience in Engineering Design. It is intended to present a practical focal point for knowledge and techniques learned in other modules as well as to continue to build on the engineering design curriculu | *Learning activities:*  This module will be delivered through an integrated series of lectures and tutorials. The learning activities are to be student focused and develop the students design knowledge through experiential learning. | *Assessment:*  Design Project (100%) |
| 6106MECH  Semester 2  *Mechanical Engineering* | Strategic Management  (20c) | *Aim:*  To enable students to develop an understanding of the nature of strategy formulation and implementation through an analysis of the debates and issues in current management strategies discourse | *Learning activities:*  Lectures, tutorials | *Assessment:*  Examination (70%) Case study report (30%) |
| 6107MECH  Semester 2  *Mechanical Engineering* | Manufacturing Operations Management  (20c) | *Aim:*  The module deals with modern, world class service and manufacturing operations management and quality control principles. The work explores: The relationship between manufacturing data and organisation in terms of planning, scheduling and cost, lean/agil | *Learning activities:*  Lectures, tutorials and private study | *Assessment:*  Examination (70%) Analysis and written report (30%) |
| 6109MECH  Semester 2  *Mechanical Engineering* | Thermodynamics  (10c) | *Aim:*  To introduce the essential principles of Thermodynamics and Fluid Mechanics | *Learning activities:*  A combination of lectures tutorials and practical sessions | *Assessment:*  Examination (70%) Portfolio (30%) |
| 6111MECH  Semester 2  *Mechanical Engineering* | Structural Integrity  (10c) | *Aim:*  To enable students to develop an understanding of the performance of materials and structures subjected to load in terms of deformation based failure, fracture and fatigue. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Portfolio (30%) |
| 6113MECH  Semester 2  *Mechanical Engineering* | Dynamics and Control  (20c) | *Aim:*  To develop knowledge and experience of analytic and simulative methods applied to  modelling of open and closed loop engineering systems with multi-physics dynamics. | *Learning activities:*  Lectures and tutorials | *Assessment:*  Examination (70%) Portfolio (30%) |
| 7002MSC  Semester 2  *Mechanical Engineering* | Advanced Engineering Design  (10c) | *Aim:*  To develop knowledge and understanding of the potential of modern parametric  computer aided design systems to support a systematic approach to integrated  product design | *Learning activities:*  Lectures, guided computer workshops, tutorials and case studies. | *Assessment:*  Individual design Report 1 (50%) Individual Design Report 2 (50%) |
| 7004MSC  Semester 2  *Mechanical Engineering* | Computational Fluid Dynamics  (10c) | *Aim:*  The module aims to explore the underlying theory of commercial computational fluid dynamics (CFD)  codes and to investigate their performance and reliability in engineering applications.  Whilst the theoretical aspects of the method will be covered in l | *Learning activities:*  Lectures, tutorial/practical CFD sessions, case studies and assignments. | *Assessment:*  Invigilated V.L.E test (40%) CFD Project (60%) |
| 7007MSC  Semester 2  *Mechanical Engineering* | Marine Design Engineering  (20c) | *Aim:*  The aim of the module is to provide students with the appropriate level of marine engineering knowledge and expertise required of an effective member of a marine engineering design team. | *Learning activities:*  Formal lectures, Tutorials, Videos. | *Assessment:*  Examination (70%) Portfolio (30%) |
| 7013MSC  Semester 2  *Mechanical Engineering* | Operations Research  (10c) | *Aim:*  This module introduces a set of fundamental techniques and tools to assist engineers/managers in making better decisions onin real world management/business problems. It will teach you how to model an operational problem in your business or organisation, | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Report (30%) |
| 7014MSC  Semester 2  *Mechanical Engineering* | Manufacturing Management  (10c) | *Aim:*  This module provides an introduction to manufacturing operations management. It focuses on the manufacturing plant and services covering the fundamentals of production planning, inventory control, and process modelling and control. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Coursework Assignment (30%) |
| 7101MECH  Semester 2  *Mechanical Engineering* | Group Project  (40c) | *Aim:*  This module aims to build upon the Level 6 Mechanical Engineering Design module, by providing an authentic design project in conjuntion with an internal or external client group or company (typically a research group or local industry). It will require st | *Learning activities:*  This module will be student centred and led, but will be supported by tutorial sessions with an academic advisor. | *Assessment:*  Design Proposal & Project Plan (20%) Written & Oral Presentation (80%) |
| 7124MECH  Semester 2  *Mechanical Engineering* | Operations Research  (20c) | *Aim:*  This module introduces a set of fundamental techniques and tools to assist engineers and managers in making better decisions on real world management/business problems. | *Learning activities:*  Lectures, tutorial and practicals | *Assessment:*  Examination (70%) Lab based online assignments (30%) |
| 4106MECH  Yearlong  *Mechanical Engineering* | Engineering Practice 1  (20c) | *Aim:*  This module aims to introduce students to a range of general engineering practices and standards. | *Learning activities:*  Lectures and engineering practical sessions. | *Assessment:*  Engineering Graphics (20%) Personal Development (20%) Experimental Methods (60%) |
| 6101MECH  Yearlong  *Mechanical Engineering* | Engineering Project  (40c) | *Aim:*  The project aims to provide a supervised but student led learning activity in a relevant area of engineering or technology. It aims to develop the academic, technical and organisational skills required to undertake a substantial individual engineering pro | *Learning activities:*  The project will be supported by regular tutorials with a project supervisor and occasional seminars on topics relating to research methods, critical writing/thinking and presentation skills. | *Assessment:*  Interim Report (20%) Final Report (60%) Presentation and Viva (20%) |