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**Plymouth University**

**Academic Partnerships**

***Cornwall College***

***Camborne***

**Programme Quality**

**Handbook for**

***BSc (Hons) Renewable Energy and Carbon Management***

**2014 – 15**

Contents

[1. Welcome and Introduction to Renewable Energy and Carbon Management. 3](#_Toc386632480)

[2. Programme Specification 4](#_Toc386632481)

[3. Module Records 21](#_Toc386632482)

# Welcome and Introduction to the BSc (Hons) Renewable Energy and Carbon Management.

Welcome to the BSc (Hons) in Renewable Energy and Carbon Management. Cornwall College is delighted that you have chosen to study with us. We are sure that you are going to have a rewarding experience here and will get a great deal from the programme.

This BSc (Hons) programme was developed with support and input from industry in order to equip graduates with the specific skills required to work within it as well as to equip you with the skills and knowledge base that all graduates should have.

**Distinctive Features of the BSc (Hons) Renewable Energy and Carbon Management**

* A problem-solving, evidence based approach that develops a can-do mentality
* A vibrant and extensive virtual learning environment that will enable you to continue with effective learning outside lectures and off-campus
* Innovative online assessment methods that let you know how you are progressing.
* Contextualisation throughout of material to enhance your employability. All modules include some assessment by coursework within which you will have an opportunity to practise and develop skills that are directly applicable within the industry.
* A superb environment in which to study these topics, with instances of renewable energy usage all around at every scale. Cornwall is England’s windiest and sunniest county with an extensive (and very beautiful) coastline and potential for geothermal energy. All these resources provide a rich playground for the study of low carbon energy generation. There is also an active sustainable buildings trust and a range of examples of innovative low carbon practice within the public sector.

This Programme Quality handbook contains important information including:

* The approved programme specification
* Module records

**Note:** the information in this handbook should be read in conjunction with the current edition of the College Student handbook available at (college to add link) which contains student support based information on issues such as finance and studying at HE along with the University’s Student Handbook - <https://www1.plymouth.ac.uk/studenthandbook> and your Teaching, Learning and Assessment Handbook available on your programme virtual learning environment.

# Programme Specification

On the following pages you will find the specification for your programme; this provides a detailed overview of the programme as a whole. It explains what you will learn and how you will be assessed throughout your honours degree. The Programme Learning Outcomes map specifies the knowledge and skills you will develop at each stage of your honours degree.

**Awarding Institution:** University of Plymouth

**Teaching Institution:** Cornwall College

**Accrediting Body:** N/A

**Final Award:** BSc (Hons)

**Intermediate Awards:** Certificate of Higher Education (Cert He); Diploma of Higher Education (DipHE)

**Programme Title:** Renewable Energy and Carbon Management

**UCAS Code:** H221

**JACS Code:** H221

**Benchmarks:** Earth Sciences, Environmental Sciences and Environmental studies (2007); Geography (2007), Politics and international relations (2007), Engineering UK-SPEC (2011), Physics, Astronomy and Astrophysics (2008), Construction, Property and Surveying (2008)

**Date of Approval:** April 2013

**Admissions Criteria**

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| **Qualification(s) Required for Entry to the BSc(Hons)** | **Comments** |
| **Candidates must have at Level 2:** | |
| At Level 2 | |
| Key Skills requirement/Higher Level Diploma | Maths, English, Sciences preferred |
| **and/or** | |
| GCSEs required at Grade C and above | Maths, English, Sciences preferred |
| **Plus at least one of the following Level 3 qualifications:** | |
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| A Levels required: | Normally A2: (Total 240 points) including at least one science subject |
| Advanced Level Diploma | Pass - Science Subject |
| BTEC National Certificate/Diploma | MMM preferred. |
| HNC/D | Pass- Science subject |
| VDA: AGNVQ, AVCE, AVS | Advanced GNVQ/AVCE or NVQ Level 3 |
| Access to HE or Year 0 provision | Certificate in appropriate subject |
| International Baccalaureate | Cases taken on an individual basis but normally awards of 24 points or more required. |
| Irish/Scottish Highers/Advanced Highers | Normally 3 Highers at Grade A or equivalent |
| Work Experience | Over 21 years of age with relevant work experience offers made on interview only |
| Other non-standard awards or experiences | Students with other non-standard awards of experience offers made on interview only |
| APEL/APCL possibilities | Please refer to University of Plymouth Academic Regulations: www.plymouth.ac.uk |
| Interview/portfolio requirements | All students would have to demonstrate at interview the necessary motivation, potential, experience and/or knowledge. |
| Independent Safeguarding Agency (ISA) / Criminal Record Bureau (CRB) clearance required | No  Note: Employment in the field would require a CBR clearance and the absence of one may well be a bar to gaining employment. |
| International Students | Qualification equivalents as above, with an additional IELTS qualification of Banding 6.5 minimum |

In order to progress into the third year, students must have achieved their Foundation Degree.

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| **Aims of the Programme:** |
| The programme is intended to:   1. Provide the student with the knowledge and understanding required to enable them to follow a career in areas related to Renewable Energy and Carbon Management 2. Develop the skills required for effective autonomous work. 3. Develop a wide range of critical, analytical IT, numeracy and practical skills to honours degree level. 4. Develop in students an awareness of the limits of their knowledge. 5. Develop academic research skills necessary for effective lifelong learning. 6. Develop such transferable skills as to prepare the student for the world of work, particularly communication, problem solving and project management skills. 7. Develop the interpersonal skills required for effective teamwork. |

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| **Programme Intended Learning Outcomes (LO):** |
| By the end of this programme the student will be able to:   1. Assess and critically evaluate the scientific, legal and organisational drivers behind renewable energy implementation and carbon management 2. Assess the role that renewable energy technologies can play in mitigating greenhouse gas emissions in specific instances 3. Formulate carbon and energy management plans appropriate for a range of organisations and businesses. 4. Devise effective strategies for the implementation of these plans 5. Function as autonomous learners equipped to cope with postgraduate studies. |

**Teaching Methods and Assessments**

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| **A: Development of Knowledge and Understanding** | **Learning and Teaching Strategy/Method** |
| By the end of the programme the student will be able to:   * Demonstrate knowledge and critical understanding of the well-established principles in the field of renewable energy and carbon management. * Demonstrate knowledge and critical understanding of the drivers towards adoption of a low carbon future. * Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments. * Understand the role of policy at local, national and international scales in shaping progression towards a low carbon future. * Use effectively standard and bespoke software to solve problems * Understand and operate within the regulatory frameworks that govern, for example, planning and the built environment. | **Primary**   * Lectures and tutorials * Directed independent study * Learning from work experience   **Secondary**   * Case studies * Problem-solving exercises |
| **NB: Benchmark References**  Earth Sciences   * Subject Knowledge 3.4   Geography   * Subject knowledge 3.8.   Politics and International relations   * Subject knowledge 4.12   Construction   * Subject knowledge and understanding 5.1., 7.5, 7.6   Engineering   * UK-SPEC IEng A1   Physics   * Bachelor’s Degree with Honours 6.4 | **Assessment**  Key knowledge and understanding is assessed via a combination of end of topic tests, examinations, fieldwork and laboratory reports, essays, presentations and seminar performances. Some work is carried out using industry standard, accredited software tools. |

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| **B: Cognitive and Intellectual Skills** | **Learning and Teaching Strategy/Method** |
| By the end of the programme the student will be competent in :   * analysing and problem-solving * decision-making * gathering, critically judging and evaluating evidence from a wide variety of primary and secondary sources. * assessing the merits of contrasting theories, explanations and policies * critically interpreting data and text * abstracting and synthesising information * developing a reasoned argument * identifying, investigating, analysing, formulating and advocating solutions to problems * taking responsibility for their own learning, and developing habits of reflection upon that learning. * recognising the importance of explicit referencing and the ethical requirements of study which requires critical and reflective use of information and communications technology in the learning process | **Primary**   * Lectures and tutorials * Class exercises * Tutorial/seminar discussions * Feedback via coursework assessment process (essays etc) * Laboratory practicals involving the correlation, analysis and synthesis of information and data the form of student generated reports   **Secondary**  For example:   * Computer-based practicals on data and measurement problems |
| **NB: Benchmark References**  Earth Sciences   * Intellectual skills 4.4   Geography   * Skills, abilities and attributes 4.4.   Politics and International relations   * Generic Intellectual skills 4.16   Construction   * Generic Skills 7.11   Engineering   * UK-SPEC IEng A2   Physics   * Bachelor’s Degree with Honours 6.5 | **Assessment**   * Assessed discussions * Essays/projects/dissertations * Examinations/tests * Coursework/group work on practical application questions |

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| **C: Key Transferable Skills**  By the end of the programme the student will be competent in:  *From Geography:*   * information handling and retrieval (including the use of online computer searches and the internet); identifying, retrieving, sorting and exchanging information; investigating a wide range of sources; and understanding intellectual property and copyright * interpersonal situations, including working with groups/teams and recognising and respecting the viewpoints of others * Communicating in English with others at all levels. * Presenting and discuss proposals. * effective use of appropriate ICT packages/systems for the analysis of data and the retrieval of appropriate information * numerical manipulation and the ability to present and interpret information graphically * use of mathematical techniques and analysis to model physical behaviour * communication of scientific information. In particular, students should be able to produce clear and accurate scientific reports | **Learning and Teaching Strategy/Method**  **Primary**   * Library and other research exercises * Group work awareness and practice * Computer-based learning and assessment   **Secondary**   * Class and seminar interactions and feedback |
| **NB: Benchmark References**  Earth Sciences   * Intellectual skills 3.9-3.12   Geography   * Skills, abilities and attributes 4.6   Politics and International relations   * Generic Intellectual skills 4.17   Construction   * Generic skills 7.11   Engineering   * UK-SPEC IEng D1 and D2   Physics  Bachelor’s Degree with Honours 6.5 | **Assessment**   * Coursework of all types * Examination preparation and completion * Assessed discussions * Group work assessments |

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| **D: Employment Related Skills**  By the end of the programme the student will have developed their   * motivation * ability to work responsibly autonomously and with others * self-awareness and self-management * empathy and insight * intellectual integrity * awareness of responsibility as a local, national and international citizen with a global perspective * interest in lifelong learning * flexibility and adaptability * creativity.   They will also be able to   * Plan for effective project implementation. * Present and discuss proposals. * Demonstrate personal and social skills. * Manage and apply safe systems of work. * Undertake engineering activities in a way that contributes to sustainable development. (Understand and encourage stakeholder involvement in sustainable development.) |  |
| **NB: Benchmark References**  Earth Sciences   * Practical skills3.8   Geography   * Discipline specific Skills 4.5   Engineering   * UK-SPEC IEng D1-D3, E1-E3 | **Assessment**   * Project work * Competence in a range of business-related communication techniques |

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| **E: Practical Skills**  The following practical skills will be developed:   * planning, conducting, and reporting on investigations, including the use of secondary data * collecting, recording and analysing data using appropriate techniques in the field and laboratory * undertaking field and laboratory investigations in a responsible and safe manner, paying due attention to risk assessment, rights of access, relevant health and safety regulations, and sensitivity to the impact of investigations on the environment and stakeholders * referencing work in an appropriate manner. * a sound familiarity with basic laboratory apparatus if on an experimental programme * effective use of appropriate ICT packages/systems for the analysis of data and the retrieval of appropriate information * an ability in numerical manipulation and the ability to present and interpret information graphically an ability to communicate | **Learning and Teaching Strategy/Method**   * Laboratory work * Projects * Designated tasks * Lectures and tutorials * Learning from work |
| **NB: Benchmark References**  Earth Sciences   * Practical skills3.8   Geography   * Discipline specific Skills 4.5   Physics  Bachelor’s Degree with Honours 6.5 | **Assessment**   * Project work * Competence in a range of business-related communication techniques |

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| **Distinctive Features of the Degree** |
| * A problem-solving, evidence based approach that develops a can-do mentality * A vibrant and extensive virtual learning environment that will enable you to continue with effective learning outside lectures and off-campus * Innovative online assessment methods that let you know how you are progressing. * Contextualisation throughout of material to enhance your employability. All modules include some assessment by coursework within which you will have an opportunity to practise and develop skills that are directly applicable within the industry. * A superb environment in which to study these topics, with instances of renewable energy usage all around at every scale. Cornwall is England’s windiest and sunniest county with an extensive (and very beautiful) coastline and potential for geothermal energy. All these resources provide a rich playground for the study of low carbon energy generation. There is also an active sustainable buildings trust and a range of examples of innovative low carbon practice within the public sector. |

**Learning Outcomes Maps for BSc (Hons) Renewable Energy and Carbon Management at HE Level 4, 5 and 6.**

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| **Learning Outcomes Map** | **Level 4** | | |
| **Graduate Attributes and Skills** |  |  |  |
| **Core Programme Intended Learning Outcomes** | **Programme Aim** | **Programme Learning Outcome** | **Related Core Modules** |
| 1. **Knowledge/ Understanding**   Students will be able to demonstrate a knowledge of the underlying concepts and principles associated with their area(s) of study, and an ability to evaluate and interpret these within the context of that (those) area(s) of study. In particular:   * *You will gain underpinning knowledge that is of use when you seek to understand applications of renewable energy technologies* * *You will learn how to assess the current state of emissions of an organisation* | *1, 4, 6* | *1,2* | CORC1116  CORC1117  CORC1118  CORC1119  CORC1120  CORC1121  CORC1122 |
| * **Cognitive / Intellectual Skills** (generic)   Students will be able to demonstrate an ability to present, evaluate, and interpret qualitative and quantitative data, to develop lines of argument and make sound judgements in accordance with basic theories and concepts of their subject(s) of study. They will also be able to demonstrate the ability to evaluate the appropriateness of different approaches to solving problems related to their area(s) of study and/or work. In particular to:   * *You will learn problem solving methods and techniques of mathematics that are of widespread use within the course* * *You will learn how to select and interpret evidence relating to climate change and fuel security* | *1, 4, 5, 6* | *1, 2* | CORC1013  CORC1116  CORC1117  CORC1118  CORC1119  CORC1120  CORC1121  CORC1122 |
| * **Key / Transferable Skills** (generic)   Students will be able to demonstrate an ability to communicate accurately and reliably, and with structured and coherent arguments. Students will also be able to demonstrate an ability to take different approaches to solving problems. In particular to:   * *You will prepare reports to a designated audience and give presentations* * *You will need to provide reasoned arguments for choices you make of technology or carbon accounting method* * *You will work in groups to prepare presentations.* * *You will solve numerical problems and show clearly how you arrived at your conclusions* | *2, 3, 4, 6* | *3,4* | CORC1013  CORC1116  CORC1117  CORC1118  CORC1119  CORC1120  CORC1121  CORC1122 |
| * **Employment-related skills**   Students will be able to demonstrate an ability to undertake further training and develop new skills within a structured and managed environment and the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility. In particular to:   * *You will learn interpersonal skills and reflect on your own strengths and areas for improvement.* | *2,3,6* | *3,4, 5* | CORC1013 |
| 1. **Practical Skills**  * *You will carry out several practical tasks within the laboratory* * *You will learn how to carrry out a carbon audit* | *4* | *2, 3* | CORC1118  CORC1119  CORC1120  CORC1121  CORC1122 |

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| Degree Intended Learning Outcomes Map | **Level 5** | | |
| **Graduate Attributes and Skills** |  |  |  |
| **Core Programme Intended Learning Outcomes** | **Programme Aim** | **Programme Learning Outcome** | **Related Core Modules** |
| 1. **Knowledge/ Understanding**   Knowledge and critical understanding of the well-established principles of their area(s) of study, and the way in which those principles have developed; knowledge of the main methods of enquiry in their subject(s) and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study. They will also be able to demonstrate an understanding of the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge . In particular:   * *You will gain a thorough understanding of the importance of reductions in greenhouse gas emissions and of the role that renewable energy technologies and carbon and energy management can play in achieve in this.* | *1, 4, 6* | *1,2* | CORC2100  CORC2101  CORC2102  CORC2103  CORC2089  CORC2084 |
| 1. **Cognitive / Intellectual Skills** (generic)   Students will be able to demonstrate an ability to apply underlying concepts and principles outside the context in which they were first studied. In particular:   * *You will apply underpinning principles in areas such as physics and mathematics, learnt in Stage One to a variety of contexts, such as resource estimation, technology specification and carbon and energy management planning* | *1, 4, 5, 6* | *1, 2* | CORC2100  CORC2101  CORC2102  CORC2103  CORC2089  CORC2084 |
| 1. **Key / Transferable Skills** (generic)   Students will be able to demonstrate an ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study; use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis and effectively communicate information, arguments, and analysis, in a variety of forms, to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively. In particular:   * *You will develop skills in report writing and presentations* * *You will develop high level spread sheeting and computer programming skills* * *You will develop a problem solving attitude.* * *You will learn to make and seek from others an evidence base for action* | *2, 3, 4, 6* | *3,4* | CORC2100  CORC2101  CORC2084 |
| 1. **Employment-related skills**   Students will be able to demonstrate an ability to apply subject principles in an employment context possibly different from that in which they were first studied; undertake further training, develop existing skills and acquire new competencies that will enable them to assume significant responsibilities within organisations and demonstrate the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision making. In particular:   * *You will engage in many activities of currency in employment, such as GIS and use of Environmental Impact Assessment tools for the built environment.* * *Your assessments will frequently put you in the role of someone at work within the renewable energy or carbon management sector and provide you with experience of direct use in the work place.* | *2,3,6* | *3,4, 5* | CORC2100  CORC2101  CORC2102  CORC2103  CORC2089  CORC2084 |
| 1. **Practical Skills** (subject specific)  * *You will carry out a range of assessed and non-assessed practical tasks, in the laboratory and out in the field.* * *You will use standard IT based methodologies for assessment of environmental impact within the built environment.* | *4* | *2, 3* | CORC2100  CORC2101  CORC2102  CORC2103  CORC2089 |

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| Degree Intended Learning Outcomes Map | **Level 6** | | |
| **Graduate Attributes and Skills** |  |  |  |
| **Core Programme Intended Learning Outcomes** | **Programme Aim** | **Programme Learning Outcome** | **Related Core Modules** |
| 1. **Knowledge/ Understanding**   Knowledge and critical understanding of the well-established principles of their area(s) of study, and the way in which those principles have developed; knowledge of the main methods of enquiry in their subject(s) and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study. They will also be able to demonstrate an understanding of the limits of their knowledge, and how this influences analyses and interpretations based on that knowledge. In particular:   * *You will learn how the knowledge and understanding acquired in Stage One and Two is applied to businesses, organisations and communities* | *3, 4, 5, 6* | *1,2, 3, 4, 5* | CORC325  CORC347  CORC332  CORC333 |
| 1. **Cognitive / Intellectual Skills** (generic)   Students will be able to demonstrate an ability to apply underlying concepts and principles outside the context in which they were first studied. In particular:   * *You will learn how to conduct and present valid, defensible research* | *3, 4, 5* | *5* | CORC325 |
| 1. **Key / Transferable Skills** (generic)   Students will be able to demonstrate an ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study; use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis and effectively communicate information, arguments, and analysis, in a variety of forms, to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively. In particular:   * *You will learn how to formulate, carry out and present a research project* * *You will learn how to manage a project* | *3, 4, 5, 6* | *3,4, 5* | CORC325  CORC347  CORC332  CORC333 |
| 1. **Employment-related skills**   Students will be able to demonstrate an ability to apply subject principles in an employment context possibly different from that in which they were first studied; undertake further training, develop existing skills and acquire new competencies that will enable them to assume significant responsibilities within organisations and demonstrate the qualities and transferable skills necessary for employment requiring the exercise of personal responsibility and decision making. In particular:   * *You will learn how to present complex information in a structured report* * *You will learn how to present this information verbally to an audience* * *You will learn to use industry standard software packages for employment related tasks* * *You will learn how to apply principles lmet in Stage One and Two to the sustainability drivers of organisations, communities and businesses* * *You will learn to work autonomously* | *3, 4, 5, 6* | *3,4, 5* | CORC325  CORC347  CORC332  CORC333 |
| 1. **Practical Skills** (subject specific)  * *You will carry out a major research project that will require you to collect primary data, and to analyse, present and interpret it.* * *You will develop proficiency in GIS software and will have the opportunity to implement high-level spreadsheet based modelling of physical and financial systems.* | *3, 4, 5, 6* | *1, 5* | CORC325  CORC347 |

**Programme Structure Diagram**

**College: Cornwall College 2707**

**Year: 2014/2015**

**PU Course Code: 4556**

**Programme: BSc (Hons) Renewable Energy and Carbon Management**

**Mode of Attendance: Full Time**

**Total Credits: 360**

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| **Stage 1** | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** |
| CORC1013C | Personal and Employability Skills Development | 20 | Core |
| CORC1116 | Quantitative Methods | 20 | Core |
| CORC1117 | Sustainable Energy Futures | 20 | Core |
| CORC1118 | Carbon Footprints and Carbon Accounting | 20 | Core |
| CORC1119 | Electrical Principles | 10 | Core |
| CORC1121 | Thermodynamics and Heat Transfer | 10 | Core |
| CORC1120 | Energy from Biomass | 10 | Core |
| CORC1122 | Marine and Hydroelectric Energy | 10 | Core |

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| **Stage 2** | | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** | |
| CORC2100 | Sustainable Energy Management | 20 | Core | |
| CORC2101 | Sustainable Architecture | 20 | Core | |
| CORC2102 | Solar Energy | 10 | Core | |
| CORC2103 | Geothermal Energy | 10 | Core | |
| CORC2089 | Wind Energy | 10 | Core | |
| CORC2084 | Carbon Management | 10 | Core | |
| **Students must choose 40 credits of optional modules:** | | | | |
| CORC2085 | Mechanic, Material and Structures | 20 | | Optional |
| CORC2086 | Data Modelling and Processing | 20 | | Optional |
| CORC2087 | Managing Change | 20 | | Optional |
| CORC2088 | Sustainable Transport Policy | 20 | | Optional |

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| **Stage 3** | | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** | |
| CORC325 | Research Project | 40 | Core | |
| CORC347 | Geographical Information Systems and Environmental Impact Assessment | 20 | Core | |
| CORC332 | Environmental Sustainability and Economics | 20 | Core | |
| CORC333 | Environmental Strategy and Marketing | 20 | Core | |
| **Students must choose 20 credits of optional modules:** | | | | |
| CORC326 | Community-Scale Renewable Energy | 20 | | Optional |
| CORC327 | Supply Chains | 20 | | Optional |

**College: Cornwall College 2707**

**Year: 2014/2015**

**PU Course Code:**

**Programme: BSc (Hons) Renewable Energy and Carbon Management**

**Mode of Attendance: Part Time**

**Total Credits: 360**

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| **Year 1 - Stage 1** | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** |
| CORC1013C | Personal and Employability Skills Development | 20 | Core |
| CORC1116 | Quantitative Methods | 20 | Core |
| CORC1117 | Sustainable Energy Futures | 20 | Core |

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| **Year 2 - Stage 1** | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** |
| CORC1118 | Carbon Footprints and Carbon Accounting | 20 | Core |
| CORC1119 | Electrical Principles | 10 | Core |
| CORC1121 | Thermodynamics and Heat Transfer | 10 | Core |
| CORC1120 | Energy from Biomass | 10 | Core |
| CORC1122 | Marine and Hydroelectric Energy | 10 | Core |

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| **Year 3 - Stage 2** | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** |
| CORC2100 | Sustainable Energy Management | 20 | Core |
| CORC2101 | Sustainable Architecture | 20 | Core |
| CORC2102 | Solar Energy | 10 | Core |
| CORC2103 | Geothermal Energy | 10 | Core |

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| **Year 4 - Stage 2** | | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** | |
| CORC2089 | Wind Energy | 10 | Core | |
| CORC2084 | Carbon Management | 10 | Core | |
| **Students must choose 40 credits of optional modules:** | | | | |
| CORC2085 | Mechanic, Material and Structures | 20 | | Optional |
| CORC2086 | Data Modelling and Processing | 20 | | Optional |
| CORC2087 | Managing Change | 20 | | Optional |
| CORC2088 | Sustainable Transport Policy | 20 | | Optional |

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| **Year 5 - Stage 3** | | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** | |
| CORC347 | Geographical Information Systems and Environmental Impact Assessment | 20 | Core | |
| CORC332 | Environmental Sustainability and Economics | 20 | Core | |
| **Students must choose 20 credits of optional modules:** | | | | |
| CORC326 | Community-Scale Renewable Energy | 20 | | Optional |
| CORC327 | Supply Chains | 20 | | Optional |

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| **Year 6 - Stage 3** | | | |
| **Module Code** | **Module Title** | **No. of Credits** | **Core / Optional** |
| CORC325 | Research Project | 40 | Core |
| CORC333 | Environmental Strategy and Marketing | 20 | Core |

# Module Records

**SECTION A:DEFINITIVE MODULE RECORD**

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| --- | --- |
| **MODULE CODE:** CORC1013 | **MODULE TITLE:** Personal and Employability Skills Development |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 4** | **JACS CODE: X900** |

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| **PRE-REQUISITES: N/A** | **CO-REQUISITES: N/A** | **COMPENSATABLE: N** |

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| **SHORT MODULE DESCRIPTOR:**This module is designed to equip students with the necessary knowledge and skills to develop themselves in terms of their personal and employability skills. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | **100%** | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: PESD |

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| **MODULE AIMS:**   * Develop conceptual and practical skills in personal development planning for study at degree level and readiness for employability. * Equip learners with baseline personal resources for study and employment such as integrity, personal responsibility, reliability and self-motivation. * Develop learners’ skills in team working, decision-making, problem solving and communication. * Stimulate learners’ creativity and encourage a focus on enterprising and challenging tasks and activity. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   * Evaluate and benchmark own study and analysis skills, capabilities and developmental needs. * Demonstrate understanding of concepts relating to personal, employability skills and work related skills. * Reflect upon how these concepts relate to personal and professional practice. * Effectively manage and self-direct personal and professional learning and development. |

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| **DATE OF APPROVAL**: 9 February 2010 | **FACULTY/OFFICE:** Academic Partnerships |
| **DATE OF IMPLEMENTATION**: Sept 2010 | **SCHOOL/PARTNER:** Cornwall College |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: All Year** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 135** |

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| **MODULE LEADER: Adele Bull** | **OTHER MODULE STAFF: Relevant site leaders.** |

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| **Summary of Module Content**   * Personal Development Planning - Personal audit, professional development, career management skills. * Intra and Interpersonal Skills - Influencing, negotiating, conflict resolution, risk taking, problem-solving, decision making, teamwork, initiative, self-esteem, leadership, innovation, creativity and enterprise. * Successful Communication - Interview skills, CVs and letters of application, self-presentation, presentation of information. * Understanding the Business Context - Organizational culture, business strategy, sustainability, cultural diversity, corporate social responsibility, financial literacy. * Project Management - Project planning, monitoring, evaluation, reporting. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lecture | 20 | Core material |
| Seminar | 12 | Smaller workshop sessions where students are supported to apply learning to themselves and their specific industry |
| Project supervision | 8 | As part of assignment 1 students have to take part in a group project, which seminar tutors set and supervise |
| Guided independent study | 160 | Students are expected to put in time outside of taught sessions on the group project and their own personal development and career planning |
| **Total** | **200** |  |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ |  |  |  |
| Coursework | C1 | **Written assignment, including essay/ oral assessment and presentation** | Total 100% | Assignments give students the opportunity to hand in work via a range of media e.g essay, presentation , video diary or blog |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1116 | **MODULE TITLE:** Quantitative Methods |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module will develop the students’ mathematical and statistical skills, and allow them to apply these techniques in a relevant practical context. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **Professional body minimum pass mark requirement: n/a** |

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| **MODULE AIMS:**  To introduce students to mathematical and calculus techniques, to enable them to apply these techniques in practical situations and to develop an understanding of the part these skills play in applying maths/calculus to describing real world problems. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Demonstrate knowledge and understanding of basic mathematics 2. Use appropriate software to solve mathematical problems 3. Use calculus to integrate and differentiate a range of functions 4. Interpret and apply basic concepts in probability and statistics | |
| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: All Year** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER:** Alice Perrett | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Indices, Standard form, Errors and Approximations, Algebra, Techniques for solving equations, Trigonometry, Exponential Functions, Indices and logs, Introduction to Calculus, Vectors, descriptive statistics (mean, mode, median, standard distribution); probability; probability distribution functions, cumulative distribution functions; duration curves. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lecture | 60 |  |
| Guided Independent Study | 140 |  |
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| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  | |  |
| T\_ |  |  | |  |
| Coursework | C1 | CW 1  CW 2 | 50% 50%  Total 100% | |  |
| Practice | P\_ |  |  | |  |
| **Updated by**: Date: xx/xx/xxxx | | | | **Approved by**: Date: XX/XX/XXXX | |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1117 | **MODULE TITLE:** SUSTAINABLE ENERGY FUTURES |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES:None** | **CO-REQUISITES:None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module surveys the key drivers towards adoption of a sustainable energy future and maps out scenarios by which it might be achieved. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 50% | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:** To provide knowledge and understanding of the key drivers towards adoption of a low carbon future, and of the principal options available for its practical realisation. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Demonstrate understanding of the principal evidence for and causes and implications of anthropogenic induced climate change, 2. Demonstrate understanding of historical, current and possible future anthropogenic energy demand 3. Demonstrate understanding of the key resource issues surrounding a range of energy generation technologies. 4. Demonstrate understanding of the environmental impact of a range of energy generation technologies   5. Formulate and defend strategies for a sustainable energy future |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: All Year** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 119** |

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| **MODULE LEADER:** Michael Hunt | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Evidence for existence of climate change; Evidence for anthropogenic induced climate change; Impacts of climate change; Mitigation strategies; Geoenegineering; Patterns of energy usage – historical, geographical, current; Fossil fuel and nuclear fuel resources – location, ownership, extraction, extent; LCA analysis of energy generation technologies;  Strategies for a sustainable energy future |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Practical Classes/Workshops | 25 |  |
| Guided Independent Study | 135 |  |
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| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ | Exam | 100% |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1118 | **MODULE TITLE:** Carbon Footprints and Carbon Accounting |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** In this module learners will explore standard methodologies for carbon footprinting of organisations. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 50% | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To enable the learner to carry out a quantified carbon footprint of an organisation using standard methodologies. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Identify the legal, political and economic drivers behind organisational footprinting. 2. Carry out a scope one/scope two carbon footprint for a range of organisations. 3. Demonstrate awareness of different carbon accounting methodologies and how these may influence an organisation’s carbon footprint. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: All year** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF: Sarah Talboys** |

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| **Summary of Module Content**   * Consideration of relevant legislation requiring carbon reporting * Consideration of different accounting methodologies * Practical use of standard carbon footprinting tools * Case Studies |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lecture | 30 |  |
| Seminar | 15 |  |
| Guided Independent Study | 155 |  |
|  |  |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1119 | **MODULE TITLE:** Electrical Principles |

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| **CREDITS:** 10 | **FHEQ** **LEVEL:4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module introduces the key concepts of electrical energy conversion and transmission. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** |  | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 100% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **Professional body minimum pass mark requirement: N/A** |

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| **MODULE AIMS:**  To equip students with the key concepts of electromagnetism that they will need for a quantitative understanding of a wide range of renewable energy technologies and problems. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Use principles of electricity conversion and transmission to solve problems in an energy supply and demand context. 2. Solve electrical circuit problems applicable to energy conversion and transmission. 3. Select, use and interpret smart energy and power monitoring equipment in a domestic and commercial setting. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 119** |

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| **MODULE LEADER:** Alice Perrett | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Electrical concepts (q, V, I, R etc.); power and energy in an electrical context; circuit problems; transmission losses; DC and AC; impedance; reactive components; batteries; cables; IV curves; motors; EM Induction; magnetic fields; flux; transformers; generators; synchronous and asynchronous machines; regulatory frameworks and compliance issues; waveshape; 3-phase, voltage regulation; power factor correction; metering; smart meters; |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 15 |  |
| Practical Classes/ Workshops | 15 |  |
| Guided Independent Study | 70 |  |
|  |  |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | Test 1 | 100% |  |
| Coursework | C1 |  |  |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1120 | **MODULE TITLE:** Energy From Biomass |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** *(max 425 characters)*  An overview of bio-energy as a source of energy for heat, electricity and transport. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To introduce the learner to bio-energy technology, its potential contribution to a more sustainable future and the issues for concern that it raises. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Make quantitative estimates of the energy potential of biofuels in different situations 2. Evaluate, compare and contrast a range of sources of bio-energy, including agricultural residues, refuse and energy crops 3. Display an understanding of the various ways in which biomass can be used for energy production 4. Analyse the economic, environmental and social implications of bio-energy development |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnership** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Geoff Garbett** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   * Bio-energy technologies in practice; short rotation coppice, pellets, energy crops, anaerobic digestion, * Bio-energy policy * Life cycle analysis of fuels * Land use change and climate change |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 9 |  |
| Practical Classes and Workshops | 5 |  |
| External Visits | 9 |  |
| Guided Independent Study | 77 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1121 | **MODULE TITLE:** Thermodynamics and Heat Transfer |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  An introduction to the key principles of thermodynamics and heat transfer, sufficient for their quantitative application to problems in the field of renewable energy technologies. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 100% | **C1** |  | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To give the learner an understanding of the principles of thermodynamics at a level that will enable them to apply these to and solve problems in the field of renewable energy technologies and sustainable architecture. In particular, the learner will gain a thorough quantitative understanding of the concept of energy and energy transfer. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Use principles of thermodynamics to solve problems pertaining to heat pumps and heat engines, with an appropriate use of mathematics and quantitative argument. 2. Use principles of heat transfer to solve steady state problems of heat flow in the built environment and its services. 3. Apply principles of energy conservation and efficiency to reductions in greenhouse gas emissions. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 114** |

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| **MODULE LEADER: Mike Williams** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  1: Work, heat, the Zeroth Law; 2: Ideal gases, real gases; 3: Vapours, liquids and solids; 4: Thermodynamic cycles and functions of state; 5: The first law of thermodynamics; 6: The second law of thermodynamics and its consequences; 7: Entropy; 8: Turbines, compressors, boilers and condensors; 9: The Rankine and gas turbine cycles; 10: Heat pumps and refrigeration cycles; vapour compression cycle; 11: Internal combustion engines 12 External combustion engines; 13 Modes of heat transfer; 14 Steady state heat flow in structures and their services; 15 Heat exchangers; 16 Use of thermal imaging. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lecture | 15 |  |
| Tutorial | 15 |  |
| Guided Independent Study | 70 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C1 |  |  |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC1122 | **MODULE TITLE:** Marine and Hydroelectric Energy |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 4** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This unit provides a survey of key current and past examples of marine and hydroelectric power technologies. Students will learn the physical and engineering principles underlying the design and operation of systems based on these technologies and through investigation of case studies, appreciate the integration and environmental impact issues that surround them as well as the economic case for their introduction. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To enable students to understand the key scientific, engineering, economic and environmental-impact principles and issues behind marine and hydroelectric power. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Evaluate energy streams within marine and hydroelectric systems 2. Select between candidate marine and hydroelectric energy systems, under a range of circumstances. 3. Evaluate the effect on local eco-systems of the installation of marine and large and small scale hydroelectric schemes 4. Be able to identify and quantitatively assess the economic factors affecting the viability of proposed individual marine energy and hydroelectric schemes |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM:Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   1. Static fluids, ideal fluid flow, energy conservation in fluids, dynamical similarity, turbulence, viscosity, wave dynamics. 2. Physical principles of marine (wave, tidal flow, tidal range) and hydroelectric systems 3. Wide ranging survey of current and past technologies 4. Use of practical demonstration and computer simulation 5. Case studies of actual marine and hydroelectric schemes |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 20 |  |
| Practical classes and workshops | 2.5 |  |
| External Visits | 4 |  |
| Guided Independent Study | 73.5 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2100 | **MODULE TITLE:** Sustainable Energy Management |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** This module aims to provide learners with the knowledge and skills required to implement and direct effective energy management systems within large and small organisations that will be appropriate for a sustainable energy future. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 50% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To enable learners to understand the role of energy management in providing a suitable living and working environment, within financial constraints * To enable learners to understand and use the key technologies required for effective energy management within organisations * To enable learners to take the lead in persuading others to conform to effective energy management practice * To explore the role of energy management within an overall climate change strategy |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Identify and quantify the streams of energy usage within an organisation and community 2. Implement and interpret building energy monitoring and control systems 3. Devise effective energy management strategies applicable to the activities and environment of an organisation or community 4. Evaluate these strategies against carbon, energy and financial criteria |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   * HVAC systems including monitoring, metering, instrumentation, software’ * Financial frameworks and drivers e.g. energy services companies, climate change levy, tariff banding * Educational imperatives, strategies for raising awareness among the workforce * Impact of climate change – causes and mitigation * Role of building services in response to climate change * Energy management within energy intensive industrial activities * Power factor correction, voltage regulation, compressed air |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Practical Classes and Workshops | 5 |  |
| Guided Independent Study | 55 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ | Test 1 | Total 100% |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2101 | **MODULE TITLE:** Sustainable Architecture |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** This module shows how to assess and reduce the in-use and embodied energy budgets of buildings. Learners will progress from a first-principles understanding of these budgets and their origin to a thorough grounding in the use of standardised methodologies for their assessment and reduction, in compliance with local building regulations, and with externally imposed emissions reduction targets. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 50% | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To identify and quantify the contributions to the in-use and embodied energy budgets of buildings * To explore and assess strategies for their reduction in the light of carbon and energy reduction targets. * To develop proficiency in the use and appraisal of standardised environmental impact assessment tools for the built environment |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Articulate the rationale for reduction in greenhouse gas emissions from the built environment 2. Critically evaluate developments in regulatory and advisory frameworks intended to achieve these reductions 3. Devise and evaluate architectural solutions in terms of their cost and potential for emissions reductions. 4. Use standard methodologies for assessment of environmental impact of new-build and retrofit proposals. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 115** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Contribution of built environment to overall emissions; embodied energy vs. in-use energy; building regulations in UK and abroad; non-statutory frameworks (e.g. Passivhaus); calculation of heat loss coefficients; heat loss parameter; contributions from conduction and infiltration losses, solar gains, internal gains, lighting; thermal mass; space heating and hot water; interpretation of architects’ drawings; use of standardised methodologies; site considerations; range of case studies, drawn from domestic and non-domestic buildings. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Practical Classes and Workshops | 5 |  |
| External Visits | 4 |  |
| Guided Independent Study | 151 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C\_ | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2102 | **MODULE TITLE:** Solar Energy |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This unit will provide students with an understanding of the key solar energy technologies, both thermal and photovoltaic, active and passive. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To enable students to learn the essential facts and principles of the key thermal and photovoltaic solar energy technologies. * To enable students to estimate the solar resource at a given site and assess the suitability of a site for use of solar energy generation. * To enable students to assess the financial viability of a solar project. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Estimate and measure the available solar energy at a given site, making appropriate use of available data, relevant physical principles and data acquisition instrumentation. 2. Demonstrate an understanding and broad knowledge of current solar energy technologies and their application for electricity and heat generation. 3. Critically evaluate case studies involving the application of these technologies in both isolated and grid connected systems, including a cost-benefit analysis. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Mike Williams** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  The nature and availability of solar radiation; The interaction of solar radiation with glass; Low temperature solar energy applications; Active and passive solar heating; Solar thermal energy and electricity generation; The physical principles and nature of photovoltaic cells; The use of PV cells in remote power applications; The use of PV cells in grid connected systems; Concentrated solar power; Financial calculations; System sizing; grid connection compliance issues; integration with other renewable energy technologies; Financial consideration; impact of subsidy regime; |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 12 |  |
| Tutorial | 12 |  |
| Practical Classes/Workshops | 5 |  |
| Guided Independent Study | 71 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2089 | **MODULE TITLE:** Wind Energy |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  An overview of the physical principles and engineering, electrical and financial considerations underlying the use and further development of wind energy technologies. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 100% | **C1** |  | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To gain an understanding of key renewable energy technologies devoted to exploitation of wind as an energy resource. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Estimate the wind energy resource of a site. 2. Model wind energy technologies and make quantitative assessments of the impact of various design parameters on energy, power and economic considerations 3. Assess the role that wind energy can play within an overall energy solution on a local and national scale 4. Evaluate the environmental impact of wind renewable energy technology. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   1. Physical principles of wind systems, including computer modelling 2. Aerodynamics 3. Detailed consideration of design principles behind actual wind turbine technologies 4. Practical work involving operation of model systems 5. Cost-benefit calculations for range of scenarios and communities 6. Integration with electrical power generation systems |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 20 |  |
| Practical Classes and Workshops | 2 |  |
| External Visits | 4 |  |
| Guided Independent Study | 74 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C1 |  |  |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2103 | **MODULE TITLE:** Geothermal Energy |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module surveys the resources, physics, technologies and economic potential of geothermal and heat pump energy in the UK and elsewhere. |

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| **ELEMENTS OF ASSESSMENT** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 100% | **C1** |  | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **Professional body minimum pass mark requirement: N/A** |

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| **MODULE AIMS:**  To enable the learner to gain sufficient knowledge and understanding of the science, technology and economic potential of geothermal and heat pump energy that they can quantitatively assess its role in a renewable and mixed energy economy. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Assess quantitatively the likely heat flow for a given site and compare with demand. 2. Evaluate the suitability and potential of a range of geothermal and heat pump technologies for a site. 3. Determine the carbon and financial thresholds for a given project. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   1. Overview of global geothermal energy resources. 2. Physics and geology of geothermal energy, in particular of hot dry rocks schemes and of cycles for heat engines and pumps 3. Technologies for geothermal resource exploitation. 4. Ground/air source heating and cooling. 5. Environmental implications. 6. Potential for heat pumps to enable decarbonisation of space heating |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 20 |  |
| Practical Classes and Workshops | 2.5 |  |
| External Visits | 4 |  |
| Guided Independent Study | 73.5 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T1 |  |  |  |
| Coursework | C\_ |  |  |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2084 | **MODULE TITLE:** Carbon Management |

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| **CREDITS:** 10 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module shows students how to formulate a carbon management plan for an organisation that is suitable for the short, medium or long term, which ensures compliance with legal frameworks and benchmarks, and identifies opportunities for carbon emissions reduction. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To provide the ability to respond to a carbon audit * To plan strategically for an organisation’s carbon emissions * To ensure compliance with legal frameworks * To show how to align financial and carbon targets. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Formulate and evaluate a carbon management plan for a range of organisations 2. Compare and contrast legal frameworks intended to encourage carbon emissions reductions 3. Demonstrate financial solvency of any carbon management plan. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF: Sarah Talboys** |

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| **Summary of Module Content**  Carbon Budgets; Carbon Reporting; CRC and other reporting Schemes, Climate Change Agreements, Emissions trading; Environmental Key Performance Indicators; Benchmarking.; Environmental Management Systems; Role of employee awareness; Discounted financial assessment of proposals. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 20 |  |
| Seminars | 5 |  |
| Practical Classes/Workshops | 5 |  |
| External Visits | 4 |  |
| Guided Independent Study | 66 |  |
| **Total** | **100** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2085 | **MODULE TITLE:** Mechanic, Material and Structures |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module investigates the mechanical properties of materials, the micro-structural basis for these, and the applications of materials to structures and basic structural elements**.** |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 50% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To give students a clear understanding of the mechanical properties of materials, how these relate to the microstructure * To give students a quantitative understanding of structures. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Select suitable materials for a task based on a sound knowledge of their mechanical properties, embodied energy and microstructural bases, as appropriate. 2. Be able to apply the concepts of mechanics and mechanical properties of materials to solve problems in a renewable energy context. 3. Justify design choices in tension and compression structures based on calculations of the forces present. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 114** |

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| **MODULE LEADER: Mike Williams** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  1: Static and dynamic mechanics applicable to static, vibrating and rotating structures  2. The mechanical properties that materials possess, and the microstructural bases for these; 3: selection of appropriate materials for a given structural task, including buildings and structures for renewable energy converters (towers, blades, shafts, pressure vessels, extremes of temperature); 4: stress, strain, tension, compression, torsion, shear, and strain-energy; 5: Structures and fastenings, including tension structures and compression structures, in particular pressure vessels, walls, arches, beams, trusses and struts; 6: Study of case histories of success and failure in structural design |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Practical Classes and Workshops | 20 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ | Test 1 | Total 100% |  |
| Coursework | C\_ | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2086 | **MODULE TITLE:** Data Modelling and Processing |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module shows the learner how to use techniques of calculus to model physical and environmental processes, and how to gather and analyse data from real processes and systems, using appropriate software tools. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 50% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To learn how to model physical systems using techniques of differential and integral calculus * To learn how to select and use appropriate instrumentation for data gathering * To be able to analyse resource data using spreadsheets and other software tools * To be able to make equipment and design choices, given the above knowledge and skills. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Apply differential and integral techniques of calculus to solve contextualised problems 2. Use appropriate software to process, analyse and present data. 3. Select and implement data acquisition strategies in a range of contexts. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 122** |

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| **MODULE LEADER: Steve Brown** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Techniques of calculus, to include integration by parts, chain rule, vector calculus; Fourier analysis; Identification of problems whose solution involves first order differential equations; including examples from heat transfer ; Use of suitable software packages to solve first order equations; Applications of second order equations to problems; Applications of partial differential equations;  Use of spreadheets and elementary computer programming (e.g. VBA) for analysis and presentation of data; Multivariate curve fitting to data sets; Techniques of data acquisition; criteria for selection of instrumentation; Use of measure-correlate-predict in time limited contexts; Determination of the energy resource of a site; Discounted financial methods. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Practical Classes/Workshops | 20 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | Test 1 | Total 100% |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE: CORC2087** | **MODULE TITLE: Managing Change** |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** A module which considers the management of change with particular reference to the implementation of low-carbon policies and from which the student will gain an understanding of the problems associated with this and techniques available to deal with them. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 60% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 40% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  The aim of this module is to introduce students to the challenge of change in an organisation and community, the reasons for introducing change, the difficulties involved in undertaking it and the ways in which they can be overcome. It also considers the ways in which staff and community members can be involved in that change and how it can be monitored after implementation. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Evaluate the problems and advantages of undergoing change in an organisation or community. 2. Design and assess a strategy for the implementation of change in an organisation or community. 3. Measure the impact of change in an organisation or community to assess the effectiveness of a change management programme. 4. Understand the social, ethical, technical and cultural issues that can arise when undertaking change in an organisation. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: David Ager** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   * The meaning and reasons for change in an organisation. * Barriers to change and the solutions available to resolve these. * The relationship between organisational culture and change and the implications for company culture of change. * Step change, continuous change and embedding. * The learning organisation, and measuring and monitoring the effects of change. * Corporate social responsibility * Stakeholder analysis * Technology and change |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Seminars | 20 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | Test | Total 100% |  |
| Coursework | C\_ | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC2088 | **MODULE TITLE:** Sustainable Transport Policy |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 5** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** This module will consider the issue of transport, its importance and impact and the various policy instruments available for regulating/minimising the environmental impacts caused by it. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 60% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 40% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To provide the student with an understanding ofthe ways in which people, goods and information can be moved which reduce the impact of that movement on the environment, the economy and society. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Analyse the importance of transport in a modern developed world 2. Analyse the impact of transport on the social, economic and physical environment 3. Evaluate the various economic policy instruments which can be used to deal with transport problems 4. Analyse the possible technological and organisational solutions which can lead to greater sustainability in transport 5. Analyse the political background to the debate on transport, the nature of public opinion and the stakeholders involved. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: David Ager** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   * The development of transport and its role in society. * The impact of road, sea and air transport on the environment * Economic techniques used in controlling environmental damage in transport * Political and social implications of transport policy * Sustainable transport policy * Alternatives to transport; modern telecommunications as an alternative to travel * Update current climate and energy policy |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 40 |  |
| Seminars | 20 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | Test | Total 100% |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC347 | **MODULE TITLE:** Geographical Information Systems and Environmental Impact Assessment |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221, F9N2** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  An introduction to Geographical Information Systems in the context of Environmental Impact Assessment and environmental decision making. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 50% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  This module develops an understanding of the nature, application and practice of Geographical Information systems, as applied to Environmental Impact Assessment, and their role in environmental decision making. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:  1. Describe the EIA process and demonstrate understanding of the EIA legislation.  2. Describe the methodologies use for impact identification and prediction.  3. Understand the nature, types and application of GIS.  4. Understand the value and limitations of GIS and the information generated.  5. Use GIS to display, create, analyse, and communicate information. |

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| **DATE OF APPROVAL**: May 2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Bruce Forrest** | **OTHER MODULE STAFF: Yvonne Oates** |

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| **Summary of Module Content**  Nature, types and applications of GIS, assessing a GIS package, the navigating the GIS environment and GIS features. Creating a new GIS project, map scales and projections, distance and area, data displays, customising, inputting information, digitising. Outputting, analysing and communicating information. The purpose, origins, development, principles and practice of EIA. Stages in the EIA procedures. EIA directive and UK requirements. Methods for impact identification and prediction. Local case studies, application of GIS to one major study |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 35 |  |
| Practical Classes/Workshops | 35 |  |
| Guided Independent Study | 130 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 |  |  |  |
| T\_ | In-class test1 | Total 100% |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC325 | **MODULE TITLE:** Research Project |

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| **CREDITS:** 40 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: No** |

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| **SHORT MODULE DESCRIPTOR:** This module requires students to plan, manage and undertake an honours research project. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 100% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  To plan, manage and carry out an honours research project. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:  Project Management Part   1. Manage a project with due regard for Health and Safety at Work   Project part:   1. Plan a research project and work autonomously 2. Identify and critically review relevant literature 3. Develop and justify appropriate techniques to gather and analyse data. 4. Present results appropriately and effectively. 5. Critically analyse methodology and results 6. Identify improvements to methodology 7. Identify scope for further work |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: All year** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Project planning and management– objectives, actions, resources, timetable; Literature search and review; Application of appropriate techniques to gather and analyse data; Presentation of results in an appropriate format and in a seminar situation; Critical evaluation of methodology, results and scope for further work. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Tutorials | 40 |  |
| Lectures | 20 |  |
| Guided Independent Study | 340 |  |
|  |  |  |
| **Total** | **400** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ |  |  |  |
| Coursework | C\_ | Assignment  Dissertation | 30%  70%  Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC332 | **MODULE TITLE:** Environmental Sustainability and Economics |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221, F9N2** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** This module introduces the student to the impact and use of economic policies and theories on the environment. It shows how the use of models and ideas from the field of economics can assist in resolving environmental problems. It builds on an understanding of economic theory to consider the use of a range of environmental problems and the possible solutions which the science of economics can offer. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 60% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 40% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:** To provide students with an understanding of the relevance, and possible drawbacks, to the use of economic ideas to provide a perspective in understanding environmental issues and resolving environmental problems. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Have knowledge of economic principles and understand how they relate to environmental issues. 2. Have an awareness of the ethical issues which affect economic decisions in the environment including such issues as the valuation of intangibles. 3. Assess a range of data and information using a range of sources within journals and government and other official publications. 4. Evaluate the relevance of economic ideas to particular areas of policy and compare them to other possible publications. 5. Use information selectively and with minimum guidance to produce a competent study of an issue in environmental economics. 6. Show how economic principles can be applied to the resolution of environmental problems using appropriate tools and knowledge. |

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| **DATE OF APPROVAL**: May 2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: David Ager** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**  Introduction to economic principles, market economics, market failure, environmental sustainability, cost-benefit analysis, tradable permits, pollution taxes and congestion charges. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 45 |  |
| Guided Independent Study | 155 |  |
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| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | Briefing paper | 100% |  |
| Coursework | C1 | Case Study Questions | 100%  Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC333 | **MODULE TITLE:** Environmental Strategy and Marketing |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:** This module enables students to devise and evaluate strategic plans and policies as they apply to projects, organisations and agencies involved with environmental issues. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) |  | **C1** | 60% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) | 40% | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:** Students will explore the contrasting demands of business and the environment, adopting appropriate strategic planning models and critically appraising alternatives. They will be expected to make objective judgements and build a strategic plan through the application of sound business and environmental management techniques. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Identify and evaluate alternative environmental performance criteria. 2. Critically evaluate the strategic policies and plans of an organisation/project against justified environmental criteria. 3. Develop an understanding of market research processes to inform the strategic planning process. 4. Devise an outline strategic plan based on this analysis and construct this in a way that confirms to sound business practice without compromising the environmental objectives. 5. Create a marketing framework for communicating policy/plans to a potentially mixed and/or hostile audience in an effective way.   (SEEC Level Descriptors**:** Knowledge and Understanding – Knowledge Base; Cognitive/Intellectual Skills – Evaluation; Key/Transferable Skills – Communication) |

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| **DATE OF APPROVAL**: May 2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** | **TERM: Autumn/Winter** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michelle Lawrence** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content:**  Objective setting and stakeholder analysis. Environmental scanning, SWOT analysis and assessing strategic capability. Environmental project value chain analysis. Strategic options and decision criteria in an environmentally sensitive climate – with particular reference to potential conflict between economics wealth generation and notions of sustainability. Market research and market planning. Environmental planning and strategy in a global context. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 45 |  |
| Guided Independent Study | 155 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ |  |  |  |
| T\_ | In-class test | Total100% |  |
| Coursework | C\_ | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC326 | **MODULE TITLE:** Community-Scale Renewable Energy |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module takes the learner through the process by which community scale renewable energy projects come into being. There is a focus on successful negotiation of the planning process, on sound finance and on models of community engagement. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 50% | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**   * To investigate case studies of renewable energy projects from inception to commissioning * To identify issues key to their implementation, and success or failure * To investigate models of community engagement with community scale renewable energy projects. |

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| **ASSESSED LEARNING OUTCOMES:**  At the end of the module the learner will be expected to be able to:   1. Use GIS and/or other suitable tools to identify a suitable site for a community scale (or larger) renewable energy generation project 2. Prepare a full EIA for the proposed project(s) 3. Devise financial plans for the project. 4. Compare and critically evaluate models of community engagement with the project. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF: Yvonne Oates** |

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| **Summary of Module Content**  GIS/WindPro etc. for site selection based on resource availability; Use of suitable resource estimation software; Legal Frameworks, The planning process; Community Engagement; Community Energy Finance Models, including IPS; Case Studies, including Developer Led and Community Led Projects. |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 30 |  |
| Seminars | 20 |  |
| External Visits | 10 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E1 | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C1 | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |

**SECTION A:DEFINITIVE MODULE RECORD*.***

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| **MODULE CODE:** CORC327 | **MODULE TITLE:** Supply Chains |

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| **CREDITS:** 20 | **FHEQ** **LEVEL: 6** | **JACS CODE: H221** |

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| **PRE-REQUISITES: None** | **CO-REQUISITES: None** | **COMPENSATABLE: Y** |

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| **SHORT MODULE DESCRIPTOR:**  This module explores the carbon implications of supply chains and the possibility of carbon footprinting of goods and services. |

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| **ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions}*** | | | | | |
| WRITTEN EXAMINATION | | COURSEWORK | | PRACTICE | |
| **E1** (Formally scheduled) | 50% | **C1** | 50% | **P1** |  |
| **E2** (OSCE) |  | **C2** |  | **P3** |  |
| **T1** (in-class test) |  | **A1** |  |  |  |

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| **SUBJECT ASSESSMENT PANEL Group to which module should be linked**: Science |

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| **MODULE AIMS:**  This module aims to identify, and where possible use tools to quantify the greenhouse gas emissions of goods and services. A particular emphasis will be put on the rationale behind product footprinting, the difficulties associated with footprinting products, and the implications for low carbon procurement. |

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| **ASSESSED LEARNING OUTCOMES:** (additional guidance below)  At the end of the module the learner will be expected to be able to:   1. Articulate and critically assess the various drivers for carbon footprinting goods and services 2. Make effective use of appropriate tools for quantifying the GHG emissions associated with goods and services. 3. Articulate and critically evaluate strategies for reduction of these emissions. |

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| **DATE OF APPROVAL**: 30/04/2013 | **FACULTY/OFFICE: Academic Partnerships** |
| **DATE OF IMPLEMENTATION**: September 2013 | **SCHOOL/PARTNER: Cornwall College** |
| **DATE(S) OF APPROVED CHANGE:** XX/XX/XXXX | **TERM: Spring/Summer** |
| Additional notes (for office use only): | |

**SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT**

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| **ACADEMIC YEAR: 2013-2014** | **NATIONAL COST CENTRE: 111** |

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| **MODULE LEADER: Michael Hunt** | **OTHER MODULE STAFF:** |

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| **Summary of Module Content**   * Evaluation of methods for carbon footprinting goods and services * Tools for supply chain carbon footprinting * Carbon labelling * Procurement – policies, strategies and practices * Working with the supply chain * Case studies |

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| **SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions}*** | | |
| **Scheduled Activities** | **Hours** | **Comments/Additional Information** |
| Lectures | 30 |  |
| Seminars | 20 |  |
| Practical Classes/Workshops | 10 |  |
| Guided Independent Study | 140 |  |
| **Total** | **200** | **(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)** |

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| --- | --- | --- | --- | --- |
| ***Category*** | ***Element*** | ***Component Name*** | ***Component weighting*** | ***Comments*** *Include links to learning objectives* |
| Written exam | E\_ | Exam 1 | Total 100% |  |
| T\_ |  |  |  |
| Coursework | C\_ | CW 1 | Total 100% |  |
| Practice | P\_ |  |  |  |

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| **Updated by**: Date: xx/xx/xxxx | **Approved by**: Date: XX/XX/XXXX |