Section 1  HND and HNC in Engineering Programme Specification

| 1. Awards | Higher National Certificate; Higher National Diploma Engineering |
| 2. Route | Engineering |
| 3. Awarding Institution/Body | University of Chichester |
| 4. Teaching Institutions | The Isle of Wight College |
| 5. Programme Title | Higher National Certificate in Engineering Higher National Diploma in Engineering |
| 6. Programme Accredited by | University of Chichester |
| 7. UCAS code | Engineering |
| 8. QAA benchmarking group: | First validated in July 2008 |

1.1 Programme Rationale

These Higher National programmes are designed to provide a flexible and accessible route to Higher Education for:

- current level 3 students seeking to continue their studies while remaining Isle of Wight residents
- employees seeking to advance their qualification & skill levels
- those seeking employment in the computing/software development sector

As vocational training, the full time HND embraces current technologies and industry practices, and provides relevant work experience and projects with island employers and businesses. They are designed for work in a variety of engineering settings, for example local businesses including GKN, Gurit and Vestas. As an academic experience the programme works to provide learners with the requisite skills & knowledge to move onto a full degree programme in an Engineering discipline off the island, and to provide them with the engineering skills necessary for innovation and creativity in a field of rapid change.

In accordance with the QAA Framework for Higher Education, on completion of the programme learners will have developed a sound understanding of the principles of engineering and will have learned to apply those principles. Learners will have mastered the ability to evaluate the appropriateness of different approaches to solving problems. The vocational orientation of this programme of study will enable learners to perform effectively in their chosen engineering field.

In accordance with the QAA Benchmarking Statements, the programme acknowledges that different students are motivated to learn in different ways, and a diverse range of learning possibilities is provided on the programme to meet student needs and ensure the quality of the learning environment and the student learning experience.

To this end the programme of study is delivered partly through taught sessions at The Isle of Wight College; as well as incorporating employer supported work-based learning (WBL).

The programme is also designed to support development of the role of the current engineering employee through intermediate level study, by way of the HNC. This part time study can be used as an end in itself to deliver many of the above elements, or
as a stepping stone for a top-up to the full HND.

1.2 Distinctive Features

These collaborative HNC and HND programmes will:

- recruit students aged 18 plus years from the local area, who may not otherwise have had access to HE, due to this geographical isolation of the Isle of Wight
- attract non-traditional entrants to Higher Education
- meet training needs for local employers
- enhance recruitment to other programmes through opportunities for progression to honours level work
- allow flexible learning across 2 modes: traditional study in the classroom and work based learning

1.3 Aims of Programme

The Programme aims to:

a. Provide an environment that encourages learning through reflection
b. Enable students to develop their knowledge and skills to equip them for work in the context of rapidly changing technology
c. Provide a balanced education for the specialist wishing to work in engineering or research engineering
d. Provide students with an opportunity to develop their own capacity for both independent and co-operative work and study and to encourage in them a positive attitude towards research, change and development
e. Develop the ability to examine critically new ideas and technological developments and be able to adopt a constructive, reasoned and receptive approach to innovation
f. Encourage students to adopt a critical attitude to their work with sound relevant technical knowledge and an ability to formulate clearly viable implementation strategies
g. Enable students to understand through experience the different human aspects of working within a project team
h. Give experience of the difficulties and satisfaction of achieving group objectives, particularly in the implementation of simulated and live projects.
i. Enable students to demonstrate independent learning, research and reflective skills through the management of the work-based learning modules.
j. Develop specific expertise in a number of engineering subjects including Maths, Science, project Management

Engineering Subject Benchmark Statement

The “QAA Subject benchmark statement Engineering 2010” can be located at the website reference set out below.

The innovative element of the programme is that it is both work-related and work-based. It features employer liaison through employer-based modules which require self-directed student activity; and work-experience opportunities. Continued support from industry ensures the HND/HNC in Engineering meets employer needs and prepares students for employment and career development in the engineering sector.

1.4 Intended Learning Outcomes (student achievement)

The programme provides opportunities for students to develop and demonstrate the achievement of the following:

<table>
<thead>
<tr>
<th>Subject Knowledge</th>
<th>Teaching and Learning strategies and methods:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The course has been designed to focus on:</strong></td>
<td><strong>The Isle of Wight College</strong></td>
</tr>
<tr>
<td>• the education and training of mechanical engineers/technicians who are employed at a professional level in a variety of types of technical work, such as: mechanical design, manufacture, maintenance and technical services areas of the engineering industry</td>
<td>• lectures</td>
</tr>
<tr>
<td>• providing opportunities for engineers/technicians to achieve a nationally recognised level four vocationally specific qualification</td>
<td>• directed tasks through client/employer engagement</td>
</tr>
<tr>
<td>• providing opportunities for full-time learners to gain a nationally recognised vocationally specific qualification, to enter employment as an engineer/technician, or progress to Higher Education qualifications such as a full or part-time degree in Engineering or related area</td>
<td>• workshops</td>
</tr>
<tr>
<td>• providing opportunities for learners to focus on the development of higher level skills in a technological and management context</td>
<td>• seminars</td>
</tr>
<tr>
<td>• providing opportunities for learners to develop a range of skills, techniques and attributes essential for successful performance in working life</td>
<td>• note taking skills</td>
</tr>
<tr>
<td></td>
<td>• presentations</td>
</tr>
<tr>
<td></td>
<td>• discussions</td>
</tr>
<tr>
<td></td>
<td>• session planning</td>
</tr>
<tr>
<td></td>
<td>• guided research</td>
</tr>
<tr>
<td></td>
<td>• portfolio support</td>
</tr>
<tr>
<td></td>
<td>• presentation to peer group</td>
</tr>
<tr>
<td></td>
<td>• group critique</td>
</tr>
<tr>
<td></td>
<td>• academic tutorials</td>
</tr>
<tr>
<td></td>
<td>• e-learning</td>
</tr>
<tr>
<td></td>
<td><strong>Work Based Learning (WBL)</strong></td>
</tr>
<tr>
<td></td>
<td>• practical work-oriented activities</td>
</tr>
<tr>
<td></td>
<td>• working with colleagues</td>
</tr>
<tr>
<td></td>
<td>• reflective accounts</td>
</tr>
<tr>
<td></td>
<td>• mentor supported learning</td>
</tr>
<tr>
<td></td>
<td>• direct application of theoretical knowledge</td>
</tr>
<tr>
<td></td>
<td><strong>Forms of Assessment</strong></td>
</tr>
<tr>
<td></td>
<td>• observation</td>
</tr>
<tr>
<td></td>
<td>• employer presentation</td>
</tr>
<tr>
<td></td>
<td>• employer feedback</td>
</tr>
<tr>
<td></td>
<td>• portfolio presentation</td>
</tr>
<tr>
<td></td>
<td>• assignment outcome</td>
</tr>
<tr>
<td></td>
<td>• reports &amp; written communication</td>
</tr>
<tr>
<td></td>
<td>• presentations</td>
</tr>
<tr>
<td></td>
<td>• formal examination</td>
</tr>
<tr>
<td>Intellectual/Practical skills</td>
<td>Teaching and Learning Strategies and methods:</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Students who successfully complete the HND/HNC in Engineering programme will be able to demonstrate intellectual and practical skills by:</td>
<td>The Isle of Wight College</td>
</tr>
<tr>
<td>• developing a range of skills, techniques, personal qualities and attributes essential for successful performance in working life and thereby enabling learners to make an immediate contribution to employment at the appropriate professional level</td>
<td>• lectures</td>
</tr>
<tr>
<td>• equipping individuals with knowledge, understanding and skills for success in employment in the engineering related industries</td>
<td>• directed tasks</td>
</tr>
<tr>
<td>• enabling progression to or counting towards an undergraduate degree or further professional qualification in mechanical engineering or related area</td>
<td>• workshops</td>
</tr>
<tr>
<td>• providing a significant education base for progression to Incorporated Engineer level</td>
<td>• seminars</td>
</tr>
<tr>
<td>• using of methods and tools, such as the deployment of appropriate theory, practices and tools for the specification, design, implementation and evaluation of engineering projects</td>
<td>• presentations</td>
</tr>
<tr>
<td>• using mathematical techniques to analyse the viability of engineering products and businesses</td>
<td>• guest speakers</td>
</tr>
<tr>
<td>• improving the efficiency of a process through the Business Improvement Techniques rationale</td>
<td>• discussion</td>
</tr>
<tr>
<td>• Ability to see a design through all phases to manufacture</td>
<td>• guided research</td>
</tr>
<tr>
<td>• Selecting materials for production of components</td>
<td>• portfolio support</td>
</tr>
</tbody>
</table>

Work based Learning (WBL)

• observation
• practical work-oriented activities
• working with colleagues and clients
• mentor supported learning

Forms of Assessment

• observation
• design production
• employer presentation
• employer feedback
• portfolio presentation
• reflective accounts
• assignment outcome
• reports
• continuous (peer and self) assessment
• formal examination
Transferable Skills

Students will be expected to develop the ability to:

- analyse, synthesise and summarise information critically
- read and use appropriate literature with a full and critical understanding
- think independently, solve problems and devise innovative solutions
- take responsibility for their own learning and recognise their own learning style
- develop and refine written communication of a standard applicable to HE programmes
- find and review literature to underpin evidence-based practice and how to use this knowledge within extended written projects, case studies, reports and self-reflective studies
- apply subject knowledge and understanding to address familiar and unfamiliar problems
- design, plan, conduct and report on investigations
- use knowledge, understanding and skills to evaluate and formulate evidence-based arguments
- identify solutions to clearly defined problems
- develop and maintain inter-professional relationships and team working
- communicate the results of their study and other work accurately and reliably using a range of specialist techniques
- identify and address their own major learning needs within defined contexts
- undertake guided further learning in new areas
- apply subject-related and transferable skills to contexts where the scope of the task and criteria for decisions are generally well defined but where personal responsibility and initiative is required

Transferable skills are part of the general assessment programme and are encountered both explicitly & implicitly through teaching strategies and modules and as indicated above.
Professional Attributes

- identify and apply strategies to find appropriate solutions
- select/design and apply appropriate methods/techniques
- present and communicate appropriate findings
- use critical reflection to evaluate own work and justify valid conclusions
- take responsibility for managing and organising activities
- demonstrate convergent/lateral/creative thinking
- appreciation of the need for continuing professional development in recognition of the need for lifelong learning

Teaching and Learning Strategies and methods:

The Isle of Wight College

- lectures
- directed tasks through client/employer engagement
- workshops
- seminars
- presentations
- discussions
- session planning
- guided research
- portfolio support
- presentation to peer group
- group critique
- academic tutorials
- e-learning

Work Based Learning –
Units specifically designed to be completed by association with activities and development in the workplace

Forms of Assessment

- reports
- session plans
- presentations
- observations
- presentation
- employer feedback
- portfolio presentation
- assignment outcome
- continuous (peer and self) assessment
- formal examination
1.5 Quality Indicators

The HNC/D in Engineering programme operates within an established framework of Quality Assurance both at The Isle of Wight College and through the University of Chichester. The University’s Academic Standards Committee (ASC) is responsible to the Academic Board for maintaining quality systems including the appointment of External Examiners, and the validation, annual monitoring and review of the programme.

The quality of the programme is monitored by the following methods:

(i) Internal Quality Assurance

The Isle of Wight College’s structures for Quality Assurance are reinforced within the Engineering section and include:

- student module evaluations, supplemented by staff and student discussion at the end of each module
- formal (graded) observation of teaching sessions
- internal moderation meetings and exam boards
- student representatives meetings with programme leader and head of the work placement setting
- regular teaching team and technical staff meetings; periodic consultation with outside professionals
- issues in External Examiner’s reports that are identified for action in Annual Monitoring Reviews
- recommendations and requirements of external assessment and validation panels
- reviews of individual staff performance through the College Appraisal process

(ii) External Quality Assurance

- provision of high-quality teaching staff with appropriate specialist interests
- external examination of College and work-based modules, including students’ assessed work
- IQER Quality Review
- College HE Section Leader attendance at Chichester University Academic Standards Committee meetings
1.6 Admissions requirements

The admission of students to this programme is covered in section 7 of the university’s Academic Regulations (2011) and The Isle of Wight College joint Academic Regulations. It is expected that a number of students will enter the programme via the appropriate industrial experience route.

Applicants should be at least 18 years old and possess:

- 4 GCSE passes at grade C or above, including Maths and English

Together with one or more of the following:

- A UCAS tariff of 120
- One pass at Advanced GCE Level
- One pass in a 6-unit vocational A Level or National Award in Engineering
- A broader base of studies incorporating AS Level
- Success in an Access to Higher Education course
- Formally assessed outcomes acquired via APL or APEL

Applicants without the qualifications specified above will be considered individually on the basis of their ability to study the subject at the required level, which will typically be in the form of a written test of maths ability.

Where English is not the applicant’s first language an IELTs score of 6.0 or TOEFL score of 580 (paper-based) or 237 (computer-based) or equivalent qualification, will be required.

Applicants may apply for exemption from specified units on the programme through AP(E)L up to a maximum amount of 50% of the total credits for the programme. However, a student must study at least 50 credits at Level 4 for the Higher National Diploma.

Advanced entry to a HND programme may be considered by exception, where students are in receipt of a Certificate of Higher Education or a Higher National Certificate (Level 4) or equivalent qualifications recognised by professional statutory or regulatory bodies.

You will be offered the opportunity to visit and discuss programme issues with staff prior to application. All applicants are required to undergo a formal interview before an offer to join the programme is made.

All applicants will be required to self-disclose any criminal convictions.
### 1.7 Diagram of the programme

#### HNC route: This is a part-time route and includes both H1 and H2 credits.

Semesters 1-6 (some work based units run over the summer)

**All modules are compulsory** (H2s modules underlined)

- Mechanical Principles
- Project Design, Evaluation and Implementation
- Engineering Design
- Engineering Science
- Analytical Methods
- Materials Engineering
- Business Management
- Manufacturing Process

#### Progression Requirements

120 credits:

This programme will lead to:

- 75 level 1 credits
- 50 level 2 credits

#### HND route: This is either

- a full time route and includes all the above HNC modules in addition to those listed below, or
- a part-time, typically third year, top-up to the units achieved in the 150 credit HNC involving 6 of the 8 units below

Semesters 1-6 (some work based units run over the summer)

**All modules are compulsory** (H2s modules underlined)

- Strength of Materials
- Engineering Thermodynamics
- Design for Manufacture
- Business Improvement Techniques
- Managing Teams and Individuals
- Engineering Work-based Project
- Manufacturing Process
- Fluid Mechanics

#### Award Requirements

240 credits:

This programme will lead to:

- 105 level 1 credits
- 140 level 2 credits
Award Requirements (Including interim awards)

The **HNC in Engineering** is a Level 4 qualification. Each module has a credit rating of 10, 15 or 30 points. You will accumulate a total of:

- 120 credits, of which a maximum of 55 credits may be at Level 5

The award of HNC in Engineering will be made when you have attained:

- A total of 120 credits at either Level 4 or Level 5

The **HND in Engineering** programme is divided into two levels. At each level, all assessments must be passed at a minimum of 40%. Again, each module has a credit rating of 10, 15 or 30 points. You will accumulate the following credits over the two levels of the course:

- Level four: 120 credits, of which a maximum of 55 may be at Level 5
- Level five: 120 credits, of which 45 may be at Level 4

The award of HND in Engineering will be made when you have attained:

A total of 240 credits (120 credits at level 4, 120 credits at level 5).

Route Requirements

**Full or Part time study**

- Level 4 (HNC in Engineering – 120 credits)
- Level 5 (HND in Engineering – 240 credits)

Both full-time and part-time study is undertaken over two years split into six semesters (terms)

Level 4 – 120 credits, Level 5 120 credits. To achieve the full accreditation you must achieve 240 credits.
The units which are delivered in any particular year will vary

## Route Requirements

<table>
<thead>
<tr>
<th>Units</th>
<th>Number</th>
<th>Level</th>
<th>Credits</th>
<th>Work-based</th>
<th>HNC</th>
<th>HND</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical Principles (HND)</td>
<td>4</td>
<td>5</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Engineering Science</td>
<td>2</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Project Design, Implementation, Evaluation</td>
<td>3</td>
<td>5</td>
<td>20</td>
<td>Yes</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Analytical Methods</td>
<td>1</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;50</td>
<td>= 65</td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>21</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Strength of Materials</td>
<td>62</td>
<td>5</td>
<td>15</td>
<td>bonus</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Health, Safety and Risk Ass</td>
<td>6</td>
<td>4</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>41</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus. Management</td>
<td>7</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Engineering Thermo</td>
<td>61</td>
<td>5</td>
<td>15</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 45</td>
<td>= 75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Design</td>
<td>8</td>
<td>5</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Design for Manufacture</td>
<td>15</td>
<td>5</td>
<td>15</td>
<td>bonus</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Business Improvement Tech</td>
<td>17</td>
<td>5</td>
<td>15</td>
<td>Yes</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Managing Teams and Individuals</td>
<td>38</td>
<td>5</td>
<td>15</td>
<td>Yes</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Work-based Proj</td>
<td>29</td>
<td>5</td>
<td>15</td>
<td>Yes</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Project Management</td>
<td>37</td>
<td>4</td>
<td>15</td>
<td>Yes</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Manufacturing Process</td>
<td>10</td>
<td>4</td>
<td>15</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Personal, Prof Dev</td>
<td>27</td>
<td>5</td>
<td>15</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Further Analytical Methods for Eng</td>
<td>35</td>
<td>5</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Maths for Engineering</td>
<td>59</td>
<td>5</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Management</td>
<td>52</td>
<td>5</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>≥ 120</td>
<td>≥ 240 (≥125 L5)</td>
</tr>
</tbody>
</table>