

## Programme Specification

<b>Programme Title</b>	<b>International Year One in Engineering</b>
<b>Awarding Body</b>	<b>Kaplan International Colleges and the University of the West of England</b>
<b>Level and Credits</b>	<b>NQF level 4. 120 credits.</b>
<b>Name of Award</b>	<b>International Year One Award in Engineering</b>
<b>Mode of Study</b>	<b>Full Time</b>
<b>Language of Study</b>	<b>English</b>
<b>UWE Progression Routes</b>	<b>See Appendix A</b>
<b>Valid from date</b>	<b>May 2012</b>
<b>Valid until date</b>	<b>May 2013</b>
<b>Version</b>	<b>1</b>

### Programme Aims

The International Year One in Engineering equips international students with a range of subject-related knowledge, academic skills and English language capabilities in order that they become independent, self-directed learners and achieve the necessary academic standards to progress to the second year of a range of undergraduate degrees at UK Higher Education institutions.

### Intended Learning Outcomes of Programme

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas.

### Subject Knowledge and Understanding

Upon successful completion of this programme, students will be able to demonstrate achievement of the following learning outcomes:

<b>Learning Outcomes</b>	<b>Module Name and Code</b>
<b>All students:</b>	
1. Perform calculations with complex numbers and basic functions of a complex variable, including the use of Euler's formula, De Moivre's theorem.	D053 - Mathematics for Engineering 1
2. Understand vectors and matrices with introductory knowledge of vector calculus.	D053 - Mathematics for Engineering 1
3. Understand properties of polynomials, rational functions, exponential and logarithmic functions, trigonometric functions and be able to use these functions in context.	D053 - Mathematics for Engineering 1
<b>Aerospace/Mechanical/Motorsport Engineering pathway:</b>	
1. Identify and solve first order differential equations of separable, linear and homogeneous types; find complementary functions for second order ordinary differential equations with constant coefficients; find solutions of inhomogeneous equations.	D054 - Mathematics for Engineering 2
2. Model simple differential equations as a numerical finite difference algorithm.	D054 - Mathematics for Engineering 2

3. Use a variety of methods of differentiation and integration with respect to one variable and understand the applications of differentiation and integration techniques.	D054 - Mathematics for Engineering 2
4. Solve ordinary differential equations using Laplace transform.	D054 - Mathematics for Engineering 2
5. Understand and be able to solve engineering problems using the key principles of stress analysis and dynamics, including Young's modulus, shear force and bending problems, stresses in beams, Newton's Laws of motion, work and energy, momentum and force impulse.	D052 - Mechanical Stress and Dynamics
6. Develop skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis, using the capabilities of computer based modelling.	D052 - Mechanical Stress and Dynamics
7. Understand and apply the main concepts of fluid dynamics, including the conservation of mass, momentum and energy, boundary layers, pipe flow, flow around bodies, lubrication.	D056 - Fluid Mechanics
8. Apply appropriate theoretical and practical methods to the analysis and solution of fluid dynamics engineering problems.	D056 - Fluid Mechanics
9. Analyse problems in thermodynamics using appropriate theoretical methods, mathematical techniques and engineering principles.	D057 – Thermodynamics
10. Analyse, model and simplify real problems in thermodynamics, applying mathematical methods of analysis.	D057 – Thermodynamics
11. Choose material and manufacturing processes to meet specific design criteria in relation to manufacturing volume, mechanical properties, cost, dimensional accuracy and automation.	D055 – Design, Manufacture and Materials
12. Communicate the design, material and manufacturing of products through the preparation and reading of Engineering Drawings	D055 – Design, Manufacture and Materials
<b>Electronic Engineering pathway:</b>	
1. Gain an understanding of the principles of electrical and electromagnetic signals and electrical and electronic circuit design.	D059 – Electrical and Electronic Engineering Principles 1
2. Apply electrical engineering theory to predict the practical behaviour of electrical and electronic engineering systems.	D059 – Electrical and Electronic Engineering Principles 1
3. Demonstrate an understanding of bits, binary, ASCII, algorithms, statements, loops and threads and explain Arithmetic operators, standard output, precedence, local variables and Boolean expressions.	D062 – Programming
4. Program in C and understand the fundamentals of good coding practise through the design and verification of simple control programmes.	D062 – Programming
5. Analyse digital systems using appropriate mathematical techniques and apply combinational logic theory to analyse and design systems.	D061 – Digital Electronic Systems
6. Apply digital design methods to solve practical engineering problems and use appropriate techniques to describe, simulate, implement and evaluate the effectiveness of digital designs.	D061 – Digital Electronic Systems
7. Demonstrate an understanding of the working principles of transducers, actuators and sensors and of communication engineering and communication networks.	D060 – Electrical and Electronic Engineering Principles 2

8. Explain basic quantum theory and apply analysis methods, mathematical and simulation tools such as Matlab to solve practical problems.	D060 – Electrical and Electronic Engineering Principles 2
9. Be able to select appropriate electronic components through research and analysis of available component data.	D058 – Applied Electronics
10. Demonstrate an understanding of the engineering design process to develop a suitable design solution based on competing requirements.	D058 – Applied Electronics
<b>Generic Academic Learning Outcomes</b>	
1. Develop the ability to apply research skills, including: critical analysis of a problem; evaluation of ideas and theories; synthesis of information from different sources, consideration and selection of appropriate conclusions and the development of logical inferences and recommendations.	D501 – Skills for Study 1 D507 – Skills for Study 2
2. Understand how to prepare academic writing; including how to take notes effectively and log information sources, how to use other people's work without plagiarising and how to compile bibliographies.	D501 – Skills for Study 1 D507 – Skills for Study 2
3. Express themselves more accurately and confidently, for instance by participating more effectively in discussions, giving oral presentations or defending their own work.	D501 – Skills for Study 1 D507 – Skills for Study 2 D201 – Language for Study 1 D202 – Language for Study 2 D203 – Language for Study 3
4. Develop an understanding of the requirements of their course, having considered their own individual approaches to learning.	D501 – Skills for Study 1 D507 – Skills for Study 2
<b>Practical Skills</b>	
1. The ability to undertake the following processes in English: <ul style="list-style-type: none"> <li>a. Reading for information, attitude and evaluation;</li> <li>b. Listening with confidence to a wide range of dialogue and monologue;</li> <li>c. Presenting information either in written format, for instance in a short report, or orally, for instance through a presentation; and</li> <li>d. Speaking accurately, coherently and appropriately on a variety of complex topics.</li> </ul>	D201 – Language for Study 1 D202 – Language for Study 2 D203 - Language for Study 3 D501 – Skills for Study 1 D507 – Skills for Study 2
2. The ability to give and receive peer feedback.	All modules
<b>Transferable/key Skills</b>	
1. Retrieve paper-based and electronic information from a variety of sources.	All modules
2. Plan and implement a research project.	D501 – Skills for Study 1 D507 - Skills for Study 2
3. Make effective use of IT facilities.	All modules
4. Manage resources and time.	All modules
5. Work and learn both independently and as a member of a team.	All modules
6. Communicate clearly and concisely both orally and in writing.	All modules
7. Have an increased awareness of the importance of being organised and motivated in their studies/future careers.	All modules

### Assessment

The assessment regime has been designed to ensure that (a) the students are enabled to demonstrate achievement of all the core learning outcomes and (b) the learners experience a variety of assessment tasks, in line with the range of knowledge, understandings, skills and abilities they are intended to develop. Fairness and consistency in assessments is achieved through significant attention paid to students' clarity within their assignments. Outline detail of the assessments

associated with the programme as a whole and with each module is given within the module specifications. These are further extended and clarified in both written and oral briefings provided to students before each assignment. Attendance at all sessions is a vital part of the programme. All staff operate clear and explicit criteria by which tasks are assessed and adopt and use mark schemes that are made available to the students.

Clear, comprehensive and readily accessible feedback to students on their assessments is regarded by all staff as a highly important part of their learning formation and will be given in a variety of ways, including written comments from assessors, oral comments, tutorials, and group feedbacks. In some cases peer feedback is also built into the assessment strategy, which gives students valuable insights into the assessment process and its role in building confidence and contributing to enhanced future performance. Feedback given on assignments will also be discussed in detail by students with the Learning Support Tutor (see Additional Relevant Information). Further detail and examples of the nature of assessment tasks, and the learning outcomes they assess, is provided in the module specifications.

### **Learning and Teaching Approaches**

Students are normally taught in classes of limited size, providing an environment in which students can more easily ask questions and engage in dialogue with the tutor, developing confidence and skill in classroom discussion and spoken English language proficiency. Course materials and learning support provision are designed to facilitate the gradual and supported transition to greater learner independence at NQF level 4. Curricula are developed on the basis of organised progression so that the demands on the learner in intellectual challenge, skills, knowledge, conceptualisation and learning autonomy increase.

Student learning is advanced through varied teaching methods, including lectures, tutorials, workshops and laboratories, appropriate to the subject and level, and guided self-study using skills developed in the academic skills modules and supported by materials and resources provided by the International College. Students also gain experience of working together in groups and practicing a range of transferable skills, including addressing an audience.

Specialist subjects are taught, and students are required to employ a range of specialised skills, whilst evaluating information and working within broadly defined guidelines. Support is given to students to enable them to develop an ability to operate in a variety of contexts, both in terms of novelty and creativity. Self-directed learning with a limited amount of guidance encourages students to develop a thorough approach to knowledge acquisition and detailed analysis of a high level of information.

### **Programme Reading Strategy**

#### **Core readings:**

Any essential reading on the International Year One programme will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given a study pack or be referred to texts that are available electronically, or in the library. Module handbooks will also reflect the range of reading to be carried out.

#### **Further readings:**

Further reading is advisable for some modules and, where appropriate, students will be encouraged to explore at least one of the titles held in the library on specific topics. A current list of such titles will be given in module handbooks and revised annually.

#### **Access and skills:**

Formal opportunities for students to develop their library and information skills are provided within the Skills for Study modules. Additional support is available through the Library Services web pages, including interactive tutorials on finding books and journal articles, evaluating information and referencing. Sign-up workshops are also offered by the library.

#### **Indicative reading list:**

Indicative reading lists are offered on module specifications to provide validation panels/accrediting bodies with an indication of the type and level of information students may be expected to consult. As such, the currency of the indicative texts may wane during the life span of the module specification. *Current* advice on core reading and additional texts will be available via the module handbooks.

### **Relevant QAA subject benchmark statements and other external or internal reference points**

The International Year One in Engineering has been developed in close alignment with the QAA honours degree subject benchmark statements for Engineering (2010).

The KIC Quality Assurance Framework and the supporting Academic Standards and Quality Manual provided by KIC centrally reflect appropriate sections of the QAA Code of Practice. Subject benchmark statements for NQF Level 4 are also used, as appropriate. KIC has also established graduate outcomes which reflect these.

### Programme Structure and Features

The International Year One in Engineering consists of six credit-bearing modules of 20 credits.

Students entering the programme with an IELTS of 5.5 will undertake the International Year One in Engineering three-term (Language) programme, with additional taught English language throughout the programme. Students entering the programme with an IELTS of at least 6.0 can choose either to undertake the programme over two terms or to undertake the three-term (Enhancement) programme, both of which include some taught English language during the programme.

Students with an overall IELTS of between 4.0 and 5.5 will be able to undertake an 'integrated' International Year One programme with Preparatory English. These students will then progress onto either a two-term or three-term academic programme, depending on performance.

A brief overview of the structure of the programme is presented below. For detailed information see individual module specifications.

#### Preparatory English (for students with IELTS between 4.0 and 5.5)

The level at which a student enters Preparatory English depends on IELTS level, the timing of enrolment and individual study plan.

Level 2 - 1 Term	
Non-credit bearing	
Stage A – 0.5 Term	Stage B – 0.5 Term
PE03GE – General English	PE04GE – General English
PE03SL – Speaking and Listening	PE04SL – Speaking and Listening
PE03RW – Reading and Writing	PE04RW – Reading and Writing

Level 3 - 1 Term	
Non-credit bearing	
Stage A – 0.5 Term	Stage B – 0.5 Term
PE05GE – General English	PE06GE – General English
PE05SL – Speaking and Listening	PE06SL – Speaking and Listening
PE05RW – Reading and Writing	PE06RW – Reading and Writing

**Aerospace/Mechanical/Motorsport Pathway**
**3 Term International Year One in Engineering (Language)**

Term 1		Term 2	Term 3
<b>Non-credit bearing</b>		<b>Credit bearing</b>	
D201 – Language for Study 1	D202 – Language for Study 2	D055 - Design, Manufacture and Materials (20 credits)	
D501 – Skills for Study 1		D056 - Fluid Mechanics (20 credits)	
		D057 – Thermodynamics (20 credits)	
		D053 - Mathematics for Engineering 1 (20 credits)	D054 - Mathematics for Engineering 2 (20 credits)
		D507 - Skills for Study 2 (0 credits)	D052 – Mechanical Stress and Dynamics (20 credits)
		D203 - Language for Study 3 (0 credits)	

**3 Term International Year One in Engineering (Enhancement)**

Term 1	Term 2	Term 3
<b>Non-credit bearing</b>	<b>Credit bearing</b>	
<b>Compulsory modules</b>	D055 - Design, Manufacture and Materials (20 credits)	
DEN01 - Personal Development Planning	D056 - Fluid Mechanics (20 credits)	
DEN03 – Modern British Society and Culture	D057 – Thermodynamics (20 credits)	
<b>Example optional modules (one of the below)</b>	D053 - Mathematics for Engineering 1 (20 credits)	D054 - Mathematics for Engineering 2 (20 credits)
DEN02 – Computing Skills	D507 - Skills for Study 2 (0 credits)	D052 – Mechanical Stress and Dynamics (20 credits)
DEN04 – Refresher Mathematics for Engineering	D203 - Language for Study 3 (0 credits)	

### 2 Term International Year One in Engineering

Term 1	Term 2
<b>Credit bearing</b>	
D055 - Design, Manufacture and Materials (20 credits)	
D056 - Fluid Mechanics (20 credits)	
D057 – Thermodynamics (20 credits)	
D053 - Mathematics for Engineering 1 (20 credits)	D054 - Mathematics for Engineering 2 (20 credits)
D507 - Skills for Study 2 (0 credits)	D052 – Mechanical Stress and Dynamics (20 credits)
D203 - Language for Study 3 (0 credits)	

### Electronic Engineering Pathway

#### 3 Term International Year One in Engineering (Language)

Term 1		Term 2	Term 3
<b>Non-credit bearing</b>		<b>Credit bearing</b>	
D201 – Language for Study 1	D202 – Language for Study 2	D062 – Programming (20 credits)	D061 – Digital Electronic Systems (20 credits)
D501 – Skills for Study 1		D059 – Electrical and Electronic Engineering Principles 1 (20 credits)	D060 – Electrical and Electronic Engineering Principles 2 (20 credits)
		D053 - Mathematics for Engineering 1 (20 credits)	D058 – Applied Electronics (20 credits)
		D507 - Skills for Study 2 (0 credits)	
		D203 - Language for Study 3 (0 credits)	

### 3 Term International Year One in Engineering (Enhancement)

Term 1	Term 2	Term 3
<b>Non-credit bearing</b>	<b>Credit bearing</b>	
<b>Compulsory modules</b>	D062 – Programming (20 credits)	D061 – Digital Electronic Systems (20 credits)
DEN01 - Personal Development Planning	D059 – Electrical and Electronic Engineering Principles 1 (20 credits)	D060 – Electrical and Electronic Engineering Principles 2 (20 credits)
DEN03 – Modern British Society and Culture	D053 - Mathematics for Engineering 1 (20 credits)	D058 – Applied Electronics (20 credits)
<b>Example optional modules (one of the below)</b>	D507 - Skills for Study 2 (0 credits)	
DEN02 – Computing Skills	D203 - Language for Study 3 (0 credits)	
DEN04 – Refresher Mathematics for Engineering		

### 2 Term International Year One in Engineering

Term 1	Term 2
<b>Credit bearing</b>	
D062 – Programming (20 credits)	D061 – Digital Electronic Systems (20 credits)
D059 – Electrical and Electronic Engineering Principles 1 (20 credits)	D060 – Electrical and Electronic Engineering Principles 2 (20 credits)
D053 - Mathematics for Engineering 1 (20 credits)	D058 – Applied Electronics (20 credits)
D507 - Skills for Study 2 (0 credits)	
D203 - Language for Study 3 (0 credits)	



## **Entry Requirements**

Entry onto the International Year One in Engineering is dependent upon successful completion of a minimum of 12 years of education (13 years required for certain countries) or satisfactory completion of a relevant foundation programme. Details of country-specific entry requirements are available from KIC Sales and Admissions.

For additional entry requirements relating to specific progression routes, see Appendix A

## **Academic Regulations**

Approved variant to University Academic Regulations and Procedures.

## **Additional relevant information**

Students on College programmes will be associate students of The University of the West of England, Bristol with access to the range of facilities and services, including IT and library facilities, of an undergraduate University student.

All students will receive a copy of an International Year One in Engineering programme handbook, and individual module guides for each module studied. The programme handbook provides information about the programme structure; assessment (including academic offences, plagiarism and assessment and examination dates); programme staff and student support; responsibilities of tutors and students and a series of appendices including the academic calendar, assessment rules and regulations, generic assignment marking criteria, complaints procedures and guidelines for tutorials.

Module handbooks provide detailed information about modules aims and learning outcomes; weekly content; assessment timetable, tasks and criteria and tutor contact details.

The University of the West of England, Bristol's International College will provide comprehensive and accessible student support services throughout the students' period of study. Each student will be allocated to a personal Learning Support Tutor for personal academic support. Students requiring additional English language, academic and/or pastoral support will be identified and targeted for additional support as required.

In addition to the Learning Support Tutors, a dedicated Head of Student Services has been appointed to ensure the support of student welfare and pastoral needs. The Head of Student Services will deal with all welfare related areas from point of arrival onwards and coordinate activities such as accommodation, airport arrivals, orientation and social programmes. This is a senior position within the College, reflecting the importance placed by Kaplan International Colleges on the welfare support of students.

**Date of production/revision:** September 2012