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BASIC INFORMATION

Program Name: International Foundation Year (IFY)
Type: Providing a pathway for access to higher education
Level: Level 0 (Pre-university)
Offered at: Jacobs University International College (JUIC)
Exit award: International Foundation Certificate (IFC)

Award notes: The Program is offered in five subject areas: Business, Computer Science, Industrial Engineering, Natural Sciences, and Social Sciences at Level 0. Successful achievement of agreed grades in the IFY is recognised by the University as an element in securing progression onto a number of specified undergraduate degree Programs at JU. Students also require an agreed SAT score for progression.

Modes of study: All students will be full-time students. Teaching language is English and no German knowledge is required for the studies.

Entry requirements: All students must be at least 16 years old when entering the program.

<table>
<thead>
<tr>
<th>Award</th>
<th>Standard entry requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Foundation Certificate (IFC)</td>
<td>CEFR B2/5.5 IELTS (or equivalent)</td>
</tr>
<tr>
<td></td>
<td>Minimum academic requirement is a High School Diploma/Certificate recognized as a higher education entrance qualification in Germany. Recognition is determined following guidance of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (<em>Kultusministerkonferenz</em>, KMK) and the State of Bremen.</td>
</tr>
</tbody>
</table>
PROGRAM OVERVIEW

THE JACOBS UNIVERSITY EDUCATIONAL CONCEPT

Jacobs University aims at educating students for both an academic and a professional career, putting an emphasis on four core objectives: academic quality, self-development/personal growth, internationality and the ability to succeed in the working world (employability). Hence, undergraduate study programs at Jacobs University offer a comprehensive, structured approach to prepare students for graduate education as well as career success by combining disciplinary depth and interdisciplinary breadth supplemented with skills education and extra-curricular elements.

In this context, it is Jacobs University’s aim to educate talented young people from all over the world, regardless of nationality, religion, and material prerequisites, to become citizens of the world who are able to take responsible roles for a democratic, peaceful, and sustainable development of the societies they live in. This is achieved employing high levels of teaching quality as well as manageable study loads and supportive study conditions. Undergraduate study programs and related study abroad programs convey academic knowledge as well as the ability to interact positively with other individuals and groups in culturally diverse environments. The ability to succeed in the working world is a core objective both in terms of the actual disciplinary subject matter but also with regard to social skills and intercultural competence. Study-program-specific modules and additional specializations provide the necessary depth, interdisciplinary offerings and the minor option provide breadth while university-wide general foundation and methods modules, mandatory German language requirements, and an extended internship period strengthen the employability of students. The concept of living and learning together on an international campus with many cultural and social activities supplements this education. In addition to that, Jacobs University offers professional advising and counselling, as well as other guidance services.

Jacob University’s educational concept is appreciated both nationally and internationally. While the university has consistently achieved top marks over the last decade in Germany’s most comprehensive and detailed university ranking by the Centre for Higher Education (CHE), it has also been listed by the renowned Times Higher Education (THE) magazine as one of the top 300 universities worldwide in 2020. The THE Ranking is considered as one of the most widely observed university rankings. It is based on five major indicators: research, teaching, research impact, international orientation, and the volume of research income from industry.

PROGRAM - SPECIFIC EDUCATIONAL AIMS

The International Foundation Year is a pre-university preparatory program, enabling young students from all over the world to enhance their English language capabilities, develop study skills appropriate to a Higher Education environment and acclimate to living and studying in another country and cultural context very different from their own. Alongside language and skills tuition, students working towards the International Foundation Certificate are also able
to study content modules in the subject area directly related to undergraduate Programs onto which they wish to progress. They are therefore able to move onto first year degree studies with increased confidence in their English language skills, university study skills and subject knowledge. Students are able to take SAT during their International Foundation Year should they need to do so. They also follow a Personal Development Program that sits alongside their other studies throughout the International Foundation Year.

QUALIFICATION AIMS
The International Foundation Year program at Jacobs University aims to help students:

- develop academic reading, writing, and reasoning skills by offering academic English classes at different levels with an introduction to scientific methods;
- improve mathematical competence by providing intensive mathematics and statistics training;
- bolster foundational knowledge required for their academic discipline of choice;
- prepare for the SAT exam by providing SAT training;
- improve their digital skills and literacy;
- develop knowledge and understanding of specialised subject areas studied
- recognise what is expected of them in a university environment;
- find an undergraduate program that would best suit their interests by offering guidance and providing an access route to Higher Education for international learners who want to study at a university undergraduate level but who, on joining the International Foundation Year either lack the necessary academic and linguistic qualifications for direct entry access or who wish to spend a year confirming their choice of degree subject;
- expand their academic and personal qualifications through academic advising and participation in a personal development program customized to the needs of an International Foundation Year student;
- broaden socio-cultural horizons and intercultural skills through study trips, on-site visits and involvement in the diverse international campus community.

INTENDED LEARNING OUTCOMES
By the end of the program, students will be able to

- explain what is expected of them in a university environment;
- select what study direction they would like to pursue;
- apply improved academic English thinking, reading and writing skills in an academic context;
- use improved mathematics skills to solve mathematical problems;
- use digital devices to gather, analyse and present information;
- learn and work in an intercultural and diverse environment;
- reflect on their personal and professional development.
PROGRAM STRUCTURE

All International Foundation Year (IFY) students study a combination of core modules and subject area modules. All IFY students attend core modules including English, Mathematics, Digital Literacy, and Personal Development. An elective SAT Training is provided. Furthermore, the IFY students choose one of the following two pathways, depending on their academic and personal development goals:

A | Focused Pathway
For students who already know what degree program they would like to study and want to focus mainly on that subject. Subject area modules are offered over two semesters and support the building of a foundation of knowledge that gives a head start on the academic skills needed in that subject. The IFY offers five subject areas to choose from: Business, Computer Science, Industrial Engineering, Natural Science, and Social Sciences. These subject areas will provide you with a route into a degree at Jacobs University.

B | Orientation Pathway
For students who would like to explore a variety of subjects in order to get an insight to make the right undergraduate study program choice. This pathway enables the selection of modules in different subject areas (1 module in the first semester and 3 in the second semester). The student can freely choose how to distribute the required 4 subject area modules among the subject areas. One of these modules must though be a subject specific Mathematics or Statistics module.

TEACHING, LEARNING AND ASSESSMENT STRATEGIES

Jacobs University International College is implementing a range of state-of-the-art approaches to teaching, learning and assessment. Students and their personal development are at the heart of these strategies:

A | The IFY students are provided with a highly supportive and academically challenging environment in which to develop English language and university study skills during a pre-university preparatory Program which also provides subject specific modules related to the students’ intended degree choices.

B | Students will benefit from a less formal teaching approach, involving greater interactivity within classes and between students and teachers, more questioning of received opinion and a significant step towards establishing the students as autonomous learners. Students’ confidence is boosted through working in discrete and small teaching groups, by the promotion of student participation in a supportive and encouraging environment, and by devoting time in formal classes to reinforcement of material studied.

C | Cultural acclimation to a higher education environment is facilitated through encouragement to participate in the wider community of both JU and Bremen itself.

D | The International Foundation Year aims to cater both for students who are sure of the degree subject they wish to follow and those who are still undecided. For the first group the different subject areas offer four subject focussed modules over the two semesters, which provide direct preparation for the chosen degree Program. For those still uncertain there is the
opportunity to ‘taste’ the work of different subject areas during the two semesters of the International Foundation Year.

Alongside the focussed and other general modules, students are engaged in a Personal Development Program, which provides ample opportunity for students to be introduced to and reflect on the requirements of study in a higher education environment. The Personal Development Program includes a focus on academic skills but also includes life skills of a wider purpose and which help prepare students not only for degree studies but also for interaction with others and a considered, professional approach to life, studies and the world of work.

Each student has a personal tutor. Regular tutorial sessions provide an opportunity for students to reflect on their progress in their studies, for both student and tutor to raise matters of concern and to seek to provide any additional support the student might need to strengthen any weaker areas in their studies to date.

A range of modes of assessment are deployed to include assignments, group and individual presentations, assessed practical sessions through laboratory reports, projects and interim tests to replicate the wider university experience. Formal end of module examinations feature, but as part, not the entirety of summative assessment.

REGULATIONS

Students studying the IFY follow a set of regulations appropriate to a Level 0 Program, but these are modelled on those which apply to JU’s undergraduate students. Variations are only introduced to cover the particular requirements of a pre-university Program, in particular around re-assessment opportunities.

To progress from the Program onto JU’s degrees students will need to complete the Program passing all modules with a minimum of 45%. In addition, they will need an agreed SAT score if not pre-qualified academically by having the Abitur or equivalent. To commence their Foundation studies students will have already achieved the English language requirement of the University for direct entry.

ADMISSION REQUIREMENTS

All students who obtain a high school diploma or local equivalent prior to the start of the program and who possess English language skills equivalent to the B1 level of the European Framework may apply for the International Foundation Year. The application process is selective and seeks out motivated students who show both the intellectual and social potential to thrive in a diverse international study environment.

A complete International Foundation Year application consists of the following:

- Online Application Form including a Personal Motivation Statement
- Recommendation Letter from a counselor or teacher
Certified copies of school transcripts of the last 2-3 years and a certified copy of the High School Certificate

- Educational History Form
- Proof of English Language Proficiency (minimum score of 65 on the TOEFL iBT / 5.5 on the IELTS (UK) / 46 on the Pearson PTE Academic or the Cambridge Certificate (FCE) / 90 on the Duolingo English test)

Please note for the Fall 2021 intake: Students who require a visa for Germany should apply by June 15 since the visa process can take up to two months. The application deadline for EU students is August 1. Applications are evaluated on a rolling basis.

MORE INFORMATION AND CONTACT

INTERNATIONAL FOUNDATION YEAR TEAM AT JACOBS UNIVERSITY
Email: foundationyear@jacobs-university.de
THE CURRICULAR STRUCTURE

OVERVIEW

The International Foundation Year (IFY) program offers core modules, which are mandatory for all students and subject area modules, which are mandatory elective. The IFY students have two different pathways they can choose from: The Focused Pathway and the Orientation Pathway.

In the Focused Pathway all subject area modules within one subject area need to be passed. In the Orientation Pathway the students may choose four different modules from different subject areas including one subject area specific mathematics or statistics module. The chosen first semester subject module does not postulate any restrictions for the second semester choices unless they are prerequisites for further courses. The subject areas are Business, Computer Science, Industrial Engineering, Natural Science, and Social Sciences.

The standard model for a pathway in the IFY is based on 5 ECTS credit point (CP) modules. 50 credit points overall are achieved through the successful study of four core modules and four modules by subject area. 10 credit points are achieved through Personal Development modules.

The subject specific modules are all delivered and assessed within each semester. These modules are available for compensation and re-assessment in line with the regulations covering study at Level 0.

CORE MODULES

**English for Academic Purposes** (10 credit points)

In each of their two semesters all students take a module in which the focus is on greater fluency in English language skills and improved academic study skills. In the first semester, the EAP module is generic, covering all subject areas, but in the second semester students develop language skills through modules with a focus on their chosen subject area. In this second semester, students are introduced to the scientific approach to study with an emphasis on higher-level skills such as analysis, synthesis, critical thinking and evaluation.

**Basic Mathematics or Advanced Mathematics** (5 credit points)

These modules revise high school material in mathematics and strengthen the understanding of major topics required for successful undergraduate study. Students are placed in one of the modules, Basic Mathematics or Advanced Mathematics, delivered in Semester one of the Program, depending on their performance on a Mathematics Aptitude or Placement Test on
arrival. The intention is that they consolidate their basic skills before tackling the track-specific Mathematics modules in Semester two of the subject areas.

**Digital Literacy** (5 credit points)

This module is delivered in the first semester of the International Foundation Year. It enables students to enhance their basic IT skills in terms of preparation and use of documents and spreadsheets created in Microsoft Office, and presentation skills using PowerPoint. It further helps them both to develop their research and evaluative skills through appropriate use of the Internet and to show them how using the Virtual Learning Environment (VLE) and social media can enable them to communicate effectively with their tutors and fellow students during their studies.

**SAT Preparation**

This is a non-credit bearing element in their studies for those who are not already academically qualified for entry to Jacobs University. Those students joining JUIC and still requiring a SAT, prepare for them in their first semester. If they are unable to achieve the level required for entry to JU, they have further opportunities to study for and sit SAT also later in their Program.

**Personal Development Program** (10 credit points)

All students participate in this supportive Program across both semesters of their studies at JUIC. The Program has been specially devised to help students understand what is expected of them on the Program and enable them mature into their studies. It also provides them with general skills which not only pave the way for success academically but which are also skills for life, related to the professional standards required in the world of employment. This module runs over two semesters.
MODULES BY SUBJECT AREA

SUBJECT AREA BUSINESS

**Foundation Business** (5 credit points)

The overall aim of this module is to provide students with a general introduction to the study of business by introducing the different aspects a firm has to cope with such as organization, strategic management, financial management, marketing, human resource management, business processes, corporate social responsibility, and legal foundations. The course covers the different types of businesses, from start-ups, over small and medium sized companies to multinational enterprises.

**Statistics for Business and the Social Sciences** (5 credit points)

This module builds on prior studies of Mathematics at high school and equips students with technical tools and skills that they will need for their later degrees in Business or other Social Sciences. The module covers mathematical calculation, statistical methods, as well as presentation and interpretation skills of statistical data. Moreover, it supports students to develop critical skills in assessing the reliability of data that is presented to them. The math on this module is related specifically to business and other social science context, examples used in teaching are drawn from real life scenarios that arise in these fields.

**Financial Accounting** (5 credit points)

This module aims to introduce students to the basic mechanics and processes of financial accounting in both theory and practice, including bookkeeping. It further helps students to understand the importance of financial accounting procedures and the resulting financial statements for running a business.

**Foundation Economics** (5 credit points)

This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.
SUBJECT AREA COMPUTER SCIENCE

Fundamentals of programming with Python 3 (5 credit points)

This module introduces students to the process of programming. The general principles of the Python 3 programming language are outlined and then students develop their programming skills by learning to program using Python 3. The teaching approach will involve some theory and trouble-shooting sessions but will feature a significant number of hours engaged in the practical work involved in learning and working with Python 3.

Mathematics for Computer Science (5 credit points)

This module builds on the core module of Mathematics offered during the first semester. It provides students with a grounding in mathematical structures and techniques commonly used to describe, analyse and reason about data structures and algorithms. It also introduces students to the mathematical foundations of computing systems.

Problem Solving (5 credit points)

This module builds on students' prior studies and other background knowledge and prepares them for the work that they will do later on in their Computer Science degree. This module aims to introduce students to the notion of problem solving employing a range of techniques including writing simple computer programs. It provides students with a basic understanding of algorithms and their uses. Students will gain the experience of developing simple software programs written in Python 3 to solve particular problems. The overall aim is to develop transferable skills which will benefit the students when they study for a computing degree in the future.

Computer Systems (5 credit points)

This module introduces students to the structure and components of a computer system and the key components and responsibilities of an operating system. Providing students with an understanding of how computers and their operating systems work will equip them with a good grounding for their degree studies.
SUBJECT AREA INDUSTRIAL ENGINEERING

Fundamentals of Industrial Engineering, Logistics and Supply Chain Management
(5 credit points)

This module introduces students to the fundamentals of industrial engineering as these apply to the practical problems of logistics in a business context, particularly to managing the supply chain that is critical for many businesses. They will learn the basic terminology employed in this field of study and begin to understand the efforts which companies make to manage the interconnected networks of individuals and suppliers responsible for product or service creation, procurement, manufacturing assembly and the flow of materials and products from the point of origin to the point of consumption. Students learn how this approach to creating shorter cycle times is important to businesses keen to control costs while maximizing service levels.

Mathematics for Engineers (5 credit points)

Students learn how to apply basic rules and techniques of integral and differential calculus. They study number systems, integers, rational and real numbers, examples of the use of the functions of two variables, probability and statistics, including histograms, standard deviation and normal and binomial distribution, and the definition and operation of matrices and vectors.

Financial Accounting (5 credit points)

This module aims to introduce students to the basic mechanics and processes of financial accounting in both theory and practice, including bookkeeping. It further helps students to understand the importance of financial accounting procedures and the resulting financial statements for running a business.

Foundation Economics (5 credit points)

This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.
SUBJECT AREA NATURAL SCIENCES

Foundation Biology (5 credit points)
This module builds on prior study of the sciences at high school and provides the appropriate foundation in knowledge of Biology and Biochemistry plus related practical skills to enable students to be successful in their undergraduate studies in the fields of Biomedical Science or other Biology-related degree Programs. In particular it revises high school material, strengthens understanding of fundamental principles and provides students with an understanding of cell structure and function, of how information flows through a cell and the basic principles of metabolism. Students are also provided with an introduction to the organisation and integration of physiological processes in nature but with a particular reference to animals and with an emphasis on mammalian, especially human physiology. Students consider a number of physiological processes including the cardiovascular, respiratory and digestive systems. Students also develop their practical skills and become accustomed to working safely in the laboratory environment.

Pure Mathematics (5 credit points)
This module builds on prior studies of Mathematics at high school and prepares students for the work that they will do later on in their Natural Science degree. This module revises high school material, strengthens understanding of fundamental principles and prepares students to use mathematical language appropriately and understand mathematical notation, conventions and units. They learn how a knowledge of Mathematics significantly underpins all the work they will carry out in their scientific studies.

Foundation Chemistry (5 credit points)
This module builds on prior study of the Chemistry at high school and provides the appropriate foundation in knowledge of Chemistry plus related practical skills to enable students to be successful in their undergraduate studies in the fields of Biomedical Science or other Science-related degree Programs. In particular it aims to provide students with an introduction to post-High School studies in Chemistry and to provide a stimulating learning environment in which to pass on knowledge and understanding of the basic and more advanced theoretical principles of the subject. There is an emphasis throughout the module on Organic Chemistry and on its impact through practical applications on society. Students also develop their practical skills and become accustomed to working safely in the laboratory environment.

Fundamentals of the Physical Sciences (5 credit points)
This module builds on prior study of the Physical Sciences, normally Physics, at high school and provides the appropriate foundation in scientific knowledge plus related practical skills to enable students to be successful in their undergraduate studies in their Natural Science degree Program. In particular it provides students with an understanding of materials, solids and fluids, heat and gases and the structure of the atom. In addition, students are introduced to a basic knowledge of earth sciences, geology, meteorology and oceanography. Students also use this module to develop their practical skills and become accustomed to working safely in the laboratory environment.
SUBJECT AREA SOCIAL SCIENCES

Introduction to the Social Sciences (5 credit points)

This module introduces students to the study of contemporary human societies, and the way in which social institutions, social groups, and individuals respond to core social challenges like cooperation and conflict. Students learn how key subjects of Social Sciences, like Communication Science and Media Studies, Political Science (including international relations) and Sociology approach these challenges and tackle them. The module kicks off with a brief overview of historical thinkers and their key ideas and ends at current studies on contemporary globalized societies. Major theoretical concepts are explained by drawing on current concrete problems like unemployment, poverty and wealth, migration or international conflict. This problem-oriented approach aids students’ understanding of how to contend with the challenges of highly diverse societies and allows them to successfully continue with their undergraduate social science studies.

Statistics for Business and the Social Sciences (5 credit points)

This module builds on prior studies of Mathematics at high school and equips students with technical tools and skills that they will need for their later degrees in Business or other Social Sciences. The module covers mathematical calculation, statistical methods, as well as presentation and interpretation skills of statistical data. Moreover, it supports students to develop critical skills in assessing the reliability of data that is presented to them. The math on this module is related specifically to business and other social science context, examples used in teaching are drawn from real life scenarios that arise in these fields.

Foundation Economics (5 credit points)

This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.

Introduction to Psychology (5 credit points)

This module introduces students to the main theoretical approaches in Psychology and considers its historical development as a field of study. Students are made aware of key ideas and concepts. The areas on which this module focuses are Social, Cognitive, Developmental and Biological Psychology. Research methods and related ethical considerations are introduced.
### SCHEMATIC STUDY PLAN

#### Focused Pathway – Choose One Specific Subject

<table>
<thead>
<tr>
<th>BUSINESS</th>
<th>COMPUTER SCIENCE</th>
<th>INDUSTRIAL ENGINEERING</th>
<th>NATURAL SCIENCES</th>
<th>SOCIAL SCIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics for Business &amp; Social Sciences me, 5 CP</td>
<td>Mathematics for Computer Science me, 5 CP</td>
<td>Mathematics for Engineers me, 5 CP</td>
<td>Pure Mathematics me, 5 CP</td>
<td>Statistics for Business &amp; Social Sciences me, 5 CP</td>
</tr>
<tr>
<td>Financial Accounting me, 5 CP</td>
<td>Problem Solving me, 5 CP</td>
<td>Financial Accounting me, 5 CP</td>
<td>Foundation Chemistry me, 5 CP</td>
<td>Introduction to Psychology me, 5 CP</td>
</tr>
<tr>
<td>Foundation Economics me, 5 CP</td>
<td>Computer Systems me, 5 CP</td>
<td>Foundation Economics me, 5 CP</td>
<td>Fundamentals of the Physical Sciences me, 5 CP</td>
<td>Foundation Economics me, 5 CP</td>
</tr>
</tbody>
</table>

**2nd semester**

- Personal Development m, 5 CP
- English for Academic Purposes m, 5 CP

**1st semester**

- Foundation Business me, 5 CP
- Fundamentals of Programming with Python 3 me, 5 CP
- Fundamentals of Industrial Eng., Logistics and SCM me, 5 CP
- Foundation Biology me, 5 CP
- Introduction to the Social Sciences me, 5 CP

- Personal Development m, 5 CP
- SAT Preparation e, 0 CP
- Basic Mathematics or Advanced Mathematics m, 5 CP
- Digital Literacy m, 5 CP
- English for Academic Purposes m, 5 CP

#### Orientation Pathway – Explore Different Subjects

<table>
<thead>
<tr>
<th>BUSINESS</th>
<th>COMPUTER SCIENCE</th>
<th>INDUSTRIAL ENGINEERING</th>
<th>NATURAL SCIENCES</th>
<th>SOCIAL SCIENCE</th>
</tr>
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<tbody>
<tr>
<td>Statistics for Business &amp; Social Sciences me, 5 CP</td>
<td>Mathematics for Computer Science me, 5 CP</td>
<td>Mathematics for Engineers me, 5 CP</td>
<td>Pure Mathematics me, 5 CP</td>
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<td>Financial Accounting me, 5 CP</td>
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<td>Fundamentals of the Physical Sciences me, 5 CP</td>
<td>Foundation Economics me, 5 CP</td>
</tr>
</tbody>
</table>

**2nd semester**

- Personal Development m, 5 CP
- English for Academic Purposes m, 5 CP

**1st semester**

- Foundation Business me, 5 CP
- Fundamentals of Programming with Python 3 me, 5 CP
- Fundamentals of Indust. Eng., Logistics and SCM me, 5 CP
- Foundation Biology me, 5 CP
- Introduction to the Social Sciences me, 5 CP

- Personal Development m, 5 CP
- SAT Preparation e, 0 CP
- Basic Mathematics or Advanced Mathematics m, 5 CP
- Digital Literacy m, 5 CP
- English for Academic Purposes m, 5 CP

(Abbreviations: me= mandatory elective, m= mandatory, e= elective, CP= credit points)
# Module Descriptions

## Core Modules (1st Semester)

<table>
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<th>Module Name</th>
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<td>ENGLISH FOR ACADEMIC PURPOSES (GENERIC)</td>
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### Module Components

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<td>JUIC International Foundation Year</td>
<td>Mandatory for all students during Semester One of the JUIC International Foundation Year</td>
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<td>Core module during Semester One of the Program</td>
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<table>
<thead>
<tr>
<th>Entry Requirements</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-requisites</td>
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<td></td>
<td></td>
<td></td>
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<td>125 hours</td>
</tr>
<tr>
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<td>Tutor-led but interactive classes (42 hours)</td>
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<tr>
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<td>Below Foundation level English language and academic study skills</td>
<td></td>
<td>Directed and independent learning (83 hours)</td>
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</table>

### Recommendations for Preparation

Students taking this module will have tested for English level CEFR B2/IELTS 5.5 at the application stage. Preparation prior to arrival would include an outline list of the topics to be studied during the module and a supporting reading list.

### Content and Educational Aims

The aim of this module is the development of the English skills of international students joining the JUIC International Foundation Year with the aim of achieving at least the equivalent of IELTS 6.0 for continuation onto the second semester of their International Foundation Year. Through this course the students are made aware of the critical importance of English competence in the context of their on-going academic studies.

Summary of module content:

The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking.

The approach throughout is to direct skills learning and development towards applications within an academic environment. Attention is paid to the acquisition of formal language required for production of essays, reports and presentations, for drawing information from a range of academic contexts for an appropriate contribution to academic discourse.
The emphasis is placed on developing the students’ understanding of the demands placed on them by university study, of the conventions of academic study and of the notion of good and unacceptable academic practice. Students will become familiar with the conventions of academic discourse and writing and learn to avoid plagiarism and poor academic practice.

### Intended Learning Outcomes

By the end of this module, students will be able to

- Read extended academic texts, make decisions on usefulness of content and extract information appropriate to context
- Write extended pieces of academic writing with regard to the requirements and conventions of good academic practice
- Listen interactively in classes, whether in seminar, laboratory or workshop settings, to items of varying length and complexity and develop the ability to seek clarification and exemplification
- Participate in academic discourse as both an information provider and gatherer
- Demonstrate basic research, speaking and presentational skills

### Usability and Relationship to other Modules

- English for Academic Purposes (Generic) is a foundation module studied during the first semester by students joining the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

### Assessment

**Type:** Coursework essay and presentation  
**Indicative Length:** 1000 words and 15-minute presentation  
**Scope:** Material studied during the semester and covered by Learning Outcomes (iii), (iv) and (v)  
**Weight:** 50%

**Type:** Unseen Reading and Listening Examination  
**Scope:** Demonstrates achievement of Learning Outcomes (i) and (iii)  
**Indicative Duration:** 2 hours  
**Weight:** 50%
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<tr>
<th>Module Name</th>
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<th>Level (type)</th>
<th>ECTS</th>
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<table>
<thead>
<tr>
<th>Module Components</th>
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<tbody>
<tr>
<td>Number</td>
<td>Name</td>
<td>Type</td>
<td>ECTS</td>
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<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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<table>
<thead>
<tr>
<th>Module Coordinator</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>JUIC College Director</td>
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<thead>
<tr>
<th>Program Affiliation</th>
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<tbody>
<tr>
<td>▪ JUIC International Foundation Year</td>
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<td></td>
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<tr>
<td>▪ Core module during Semester One of the Program</td>
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<thead>
<tr>
<th>Mandatory Status</th>
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<tbody>
<tr>
<td>All students must study either Basic Mathematics or Advanced Mathematics during Semester One of the JUIC International Foundation Year</td>
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</table>

<table>
<thead>
<tr>
<th>Entry Requirements</th>
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</thead>
<tbody>
<tr>
<td>Pre-requisites</td>
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<td></td>
</tr>
<tr>
<td>□ High School Diploma</td>
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<tr>
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<table>
<thead>
<tr>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td></td>
<td>Up to twice an academic year. Taught in Semester One of the Program</td>
<td>Tutor-led but interactive classes (42 hours) Directed and independent learning (83 hours)</td>
<td>14 week semester</td>
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</table>

<table>
<thead>
<tr>
<th>Recommendations for Preparation</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Content and Educational Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics is a subject of vital importance for almost any areas of modern society. An understanding of mathematics is not only needed for natural sciences and engineering but has many applications in social sciences such as economics, finance, operational research and statistics. Besides the knowledge and understanding of mathematics itself, students with a solid foundation in mathematics have valuable analytical and problem-solving skills. They are more able to think logically and objectively. These students will be in high demand in almost every field. The Basic Mathematics module confirms and reinforces students’ study of Mathematics in their prior education and ensures they attain at least the minimum standard required to embark on their track-based studies in Semester Two of the foundation program.</td>
</tr>
</tbody>
</table>

The following topics will be covered:
- apply the four operations to integers, decimals and simple fractions (proper and improper), and mixed numbers
- use conventional notation for brackets, powers, roots and reciprocals
- use the concepts and vocabulary of prime numbers, factors (divisors) and multiples including using product notation and the unique factorisation theorem
- use positive integer powers and associated real roots (square, cube and higher)
- identify and work with fractions in ratio problems; interpret fractions and percentages as operators; express one quantity as percentage of another
- simplify and manipulate algebraic expressions; understand and use standard mathematical formulae
- plot graphs of equations that correspond to straight-line graphs in the coordinate plane; recognise, sketch and interpret graphs of linear functions and quadratic functions; plot and interpret graphs, in real contexts, to find approximate solutions to problems involving distance, speed and acceleration
- solve problems involving direct and inverse proportion, including graphical and algebraic representations; recognise and interpret graphs that illustrate direct and inverse proportion
- compare lengths, areas and volumes using ratio notation; make links to similarity (including trigonometric ratios)
apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles; understand and use alternate and corresponding angles on parallel lines; derive and use the sum of angles in a triangle; derive and apply the properties and definitions of special types of quadrilaterals, including square, rectangle, parallelogram, trapezium, kite, rhombus and triangles and other plane figures

apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras’ theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs

identify and apply circle definitions and properties, including: centre, radius, chord, diameter, circumference, including: tangent, arc, sector and segment

identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres; construct and interpret plans and elevations of 3D shapes; know and apply formulae to calculate: area of triangles, parallelograms, trapezia; volume of cuboids and other right prisms (including cylinders);

know the formulae: circumference of a circle, area of a circle, calculate perimeters of 2D shapes, including circles; areas of circles and composite shapes; surface area and volume of spheres, pyramids, cones and composite solids

know the formulae for: Pythagoras’ theorem and the trigonometric ratios

describe translations as 2D vectors; apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors

Furthermore, after this module the students will

use mathematics as an effective means of communication;

develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general;

take increasing responsibility for their own learning and the evaluation of their own mathematical development

**Intended Learning Outcomes**

This module revises high school material in mathematics and strengthens the understanding of major topics required for successful undergraduate study. Students following the Basic Mathematics module will have indicated that this best meets their educational needs, as determined by a Mathematics Placement or Aptitude Test, taken on entry.

By the end of this module, students will be able to

- develop their understanding of mathematical terms, notations and conventions and basic mathematical processes;
- develop their abilities to reason logically and recognize incorrect reasoning;
- generalize and to construct mathematical proofs;
- deploy their range of basic mathematical skills and techniques using them in solving problems in familiar but also increasingly complicated contexts;
- develop an understanding of coherence and progression in mathematics and of how different areas of mathematics are connected;
- recognize how a specific ‘real world’ problem may be represented mathematically and how mathematical knowledge and techniques may be used to help solve it;

**Usability and Relationship to other Modules**

Basic Mathematics is a core foundation module studied during the first semester by students joining the JUIC International Foundation Year.

**Assessment**

- **Type:** Unseen examination
- **Duration/Length:** 2.5 hours
- **Scope:** Topics studied as covered by Learning Outcomes (i) to (vi)
- **Weight:** 100%

Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.
**Module Name**
ADVANCED MATHEMATICS

<table>
<thead>
<tr>
<th>Module Code(s)</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be confirmed</td>
<td>FOUNDATION</td>
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**Module Components**

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<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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</table>

**Module Coordinator**
JUIC College Director

**Program Affiliation**
- JUIC International Foundation Year
- Core module during Semester One of the Program

**Mandatory Status**
All students must study either Basic Mathematics or Advanced Mathematics during Semester One of the JUIC International Foundation Year

**Entry Requirements**

<table>
<thead>
<tr>
<th>Pre-requisites</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ High School Diploma</td>
<td>☐ None</td>
<td>☐ None</td>
<td>Up to twice an academic year. Taught in Semester One of the Program</td>
<td>Tutor-led but interactive classes (42 hours) Directed and independent learning (83 hours)</td>
</tr>
</tbody>
</table>

**Duration**
14 week semester

**Workload**
125 hours

**Recommendations for Preparation**

**Content and Educational Aims**

Mathematics is a subject of vital importance for almost any areas of modern society. An understanding of mathematics is not only needed for natural sciences and engineering but has many applications in social sciences such as economics, finance, operational research and statistics. Besides the knowledge and understanding of mathematics itself, students with a solid foundation in mathematics have valuable analytical and problem-solving skills. They are more able to think logically and objectively. These students will be in high demand in almost every field. The Advanced Mathematics module consolidates and extends students’ study of Mathematics in their prior education and ensures they attain higher than the minimum standard required to embark on their track-based studies in Semester Two of the foundation program.

The following topics will be covered:

- Brief introduction of natural, rational, irrational und real numbers
- calculate exactly with surds; use and manipulate surds; simplify surd expressions involving squares and rationalise denominators
- simplify and manipulate algebraic expressions by: expanding products of two or more binomials; factorising quadratic expressions of the form \( ax^2 + bx + c \)
- include exponential functions \( y = kx \) for positive values of \( k \), and the trigonometric functions (with arguments in degrees) \( y = \sin x \), \( y = \cos x \) and \( y = \tan x \) for angles of any size
- solve linear equations: solve linear and quadratic inequalities in a single variable and interpret such inequalities graphically; represent linear and quadratic inequalities such as graphically
- manipulate polynomials algebraically, including expanding brackets and collecting like terms, factorisation and simple algebraic division; use of the factor theorem
- apply and prove the standard circle theorems concerning angles, radii, tangents and chords, and use them to prove related results
- know and apply the sine rule and cosine rule, to find unknown lengths and angles
- add vectors diagrammatically and perform the algebraic operations of vector addition and multiplication by scalars, and understand their geometrical interpretations; understand and use position vectors
• understand and use the sine, cosine and tangent functions; their graphs, symmetries and periodicity; solve simple trigonometric equations in a given interval, including quadratic equations in sin, cos and tan and equations involving multiples of the unknown angle
• understand and use the laws of logarithms; use logarithmic graphs
• differentiation from first principles for small positive integer powers of \( x \); apply differentiation to find gradients, tangents and normals, maxima and minima and stationary points.
• Know and use the Fundamental Theorem of Calculus; integrate \( x^n \) (excluding \( n = -1 \)), and related sums, differences and constant multiples
• Evaluate definite integrals; use a definite integral to find the area under a curve
• Integration of nth power functions

Furthermore, after this module the students will
• use mathematics as an effective means of communication;
• develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general;
• take increasing responsibility for their own learning and the evaluation of their own mathematical development

**Intended Learning Outcomes**
This module revises high school material in mathematics and consolidates the understanding of major topics required for successful undergraduate study. Students following the Advanced Mathematics module will have indicated that this best meets their educational needs, as determined by a Mathematics Placement or Aptitude Test, taken on entry.

By the end of this module, students will be able to
• develop their understanding of mathematics and mathematical processes;
• develop their abilities to reason logically and recognize incorrect reasoning;
• generalize and to construct mathematical proofs;
• extend their range of mathematical skills and techniques and use them in increasingly difficult and unstructured problems;
• develop an understanding of coherence and progression in mathematics and of how different areas of mathematics are connected;
• recognize how a specific situation may be represented mathematically and understand the relationship between ‘real world’ problems and mathematical models and how these can be refined and improved;

**Usability and Relationship to other Modules**
Advanced Mathematics is a core foundation module studied during the first semester by students joining the JUIC International Foundation Year.

**Assessment**
Type: Unseen examination
Duration/Length: 2.5 hours
Scope: Topics studied as covered by Learning Outcomes (i) to (vi)
Weight: 100%

Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.
**Module Name**
**DIGITAL LITERACY**

**Module Components**

<table>
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<tr>
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<th>Name</th>
<th>Type</th>
<th>ECTS</th>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</table>

**Module Coordinator**
JUIC College Director

**Program Affiliation**
- JUIC International Foundation Year
- Foundation module

**Mandatory Status**
Mandatory for all students on the JUIC International Foundation Year

**Entry Requirements**
- **Pre-requisites**
  - High School Diploma
  - None
- Co-requisites

**Knowledge, Abilities, or Skills**
- A basic understanding of the operation of computer hardware and software/applications
- Below Foundation level practical skills in IT

**Frequency**
Up to twice an academic year. Taught in the first semester of the Program

**Duration**
14 week semester

**Workload**
125 hours

**Recommendations for Preparation**
Students taking this module may not have had formal teaching in use of computers and software appropriate to academic studies. They will, however, have demonstrated a basic grasp of the potential of computers as an appropriate software, including search engines, for academic studies and have developed basic, possibly self-taught, IT skills. Preparation prior to arrival would include an outline list of the topics to be studied during the module. Early classes on this module will provide opportunities for students to demonstrate where they stand in knowledge and skills in this area.

**Content and Educational Aims**
This module enables students to enhance their basic IT skills in terms of use of preparation and use of documents and spreadsheets using Microsoft Office, and presentation skills using Powerpoint. It further helps them both to develop the research skills through appropriate use of the Internet and to show them how using the Virtual Learning Environment (VLE) and social media can enable them to communicate effectively with their tutors and fellow students during their studies.

**Summary of module content:**

This module focuses on appropriate means of communication in academic work. Students will be taught how appropriate software can support their studies in using Microsoft Word for writing their essays and other coursework and Microsoft Excel to present supporting data effectively. Students will also be taught to use PowerPoint to help them raise the quality of their presentations. (It is understood that for many students this will involve going over familiar territory but it is hoped that value will be added to their capabilities and understanding by placing this work squarely in an academic context.)

The students are shown how the computer can be an important tool in their development as independent learners. They are taught the most effective ways to search the Internet for information and of the need for critical evaluation of material sourced there.

The students are also taught how IT can contribute to the learning process and provide a range of ways of communicating information between student and teacher and within the teaching group, whether this be via e-mail, the University’s VLE or social media.

Throughout the course students are provided with and encouraged to find for themselves examples of applications of IT skills being acquired within their future fields of specialized study.
**Intended Learning Outcomes**
By the end of this module, students will be able to
- Demonstrate a facility with Microsoft Word in producing and enhancing documents and apply spreadsheet formulas to analyze data in Excel
- Show a facility in the use of PowerPoint in the preparation and delivery of presentations
- Demonstrate an understanding of good academic practice particularly in the contexts of referencing and the avoidance of plagiarism
- Use the Internet critically as a research tool and evaluate material accessed in the context of their wider researches
- Use the VLE, e-mails, and social media as learning and communication tools relevant to their on-going studies

**Usability and Relationship to other Modules**
Digital Literacy is a foundation module studied in their first semester by students joining the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to the degree studies at Jacobs University.

**Assessment**

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<tr>
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<td>Module Code</td>
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**Module Components**

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<th>Name</th>
<th>Type</th>
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<tbody>
<tr>
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<tr>
<td>tbc</td>
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**Module Coordinator**
JKU College Director

**Program Affiliation**
- JKU International Foundation Year

**Mandatory Status**
Mandatory for all students on the JKU International Foundation Year

**Entry Requirements**

**Pre-requisites**
- ☑ High School Diploma
- ☐ None

**Co-requisites**
- ☐ None

**Knowledge, Abilities, or Skills**
- NA

**Frequency**
Up to twice an academic year.

**Forms of Learning and Teaching**
- Tutor-led but interactive classes (84 hours) / semester
- Directed and independent learning (166 hours) / semester

**Duration**
28 weeks over two semester

**Workload**
150 hours

**Recommendations for Preparation**

**Content and Educational Aims**
The International Foundation Year's personal development program will embody the mission statement of Jacobs University. As such, the program will focus on increasing the self-competence and social skills of its FY students in a community characterized by diversity. The program is developed and based on FY students specific needs to flourish within Jacob's University environment.

Topics covered in this module include:
- Communication etiquette / channels
- Presentation Skills I: Crafting a Presentation
- Understanding and appreciating diversity
- Culture & non-violent communication
- Non-verbal communication & body language
- Critical thinking
- Team conflicts & team solutions
- Public speaking
- Effective decision making
**Intended Learning Outcomes**
Specific competency skill learning: the personal development program aims to assist FY students to develop the following competencies:

- Self-awareness
- Self-management
- Relationships skills
- Social awareness
- Responsible decision making—critical thinking

**Usability and Relationship to other Modules**
Students evaluate the academic and personal experience in writing and assess whether they were able to reach their original goals in other modules

**Assessment**

Type: Semester report 1  
Indicative Length: NA  
Scope: NA  
Weight: Pass/Fail

Type: Semester report 2  
Scope: NA  
Indicative Length: NA  
Weight: Pass/Fail
## Module Name

### SAT TRAINING

<table>
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<tr>
<th>Module Component</th>
<th>Number</th>
<th>Name</th>
<th>Type</th>
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<td>SAT English</td>
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<th>Program Affiliation</th>
<th>Mandatory Status</th>
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</thead>
<tbody>
<tr>
<td>JUIC College Director</td>
<td>▪ JUIC International Foundation Year</td>
<td>Elective for all students on the JUIC International Foundation Year</td>
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### Entry Requirements

<table>
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<th>Pre-requisites</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
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<th>Workload</th>
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<tbody>
<tr>
<td>High School Diploma</td>
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<td>At least twice an academic year.</td>
<td>▪ Tutor-led training, ▪ Directed and independent learning</td>
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</table>

### Recommendations for Preparation

**Content and Educational Aims**

Students who are required to take the SAT – standardized university admissions test, have the opportunity to participate in additional intensive SAT trainings.

**SAT Training English**

This is a comprehensive training that provides students a unique opportunity to prepare for the SAT Reading and Language Test. Students will build their reading, writing and critical thinking skills through both theoretical sessions and practical exercises. They will master content and learn strategies and tactics to tackle specific questions in each section. The course prepares students for the SAT Critical Reading Section.

The SAT Mathematics Training prepares students for the Mathematics Section of the SAT.

### Intended Learning Outcomes

**Usability and Relationship to other Modules**

NA

**Assessment**

NA
# CORE MODULES (2ND SEMESTER)

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<tr>
<td>ENGLISH FOR ACADEMIC PURPOSES (BUSINESS TRACK)</td>
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<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</table>

## Module Coordinator

**JUIC College Director**

- **Program Affiliation**
  - JUIC International Foundation Year
  - Core module for the Business Track, delivered during Semester Two of the Program

- **Mandatory Status**
  - Mandatory for students on the Business Track during Semester Two of the JUIC International Foundation Year

## Entry Requirements

### Pre-requisites

- High School Diploma
- Successful completion of EAP (Generic) module in Semester One

### Co-requisites

- None

### Knowledge, Abilities, or Skills

- English level equivalent to CEFR B2/IELTS 6.0
- Foundation level English language and academic study skills

### Frequency

- Up to twice an academic year. Taught in Semester Two of the Program

### Duration

- 14 week semester

### Forms of Learning and Teaching

- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

### Workload

- 125 hours

## Recommendations for Preparation

Students taking this module will have attained an English level equivalent to CEFR B2/IELTS 6.0 by successful completion of the EAP (Generic) during Semester One of the JUIC International Foundation Year. Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

## Content and Educational Aims

The aims of the module are to introduce and develop English language skills directly relevant to the academic study of Business and through academic business investigation. It also aims to introduce and develop students' understanding of basic business models. Students explore and interpret business source materials and use these and other learning materials to develop the practice of using business case studies to enhance their understanding of how business works in practice. Throughout the module students work continually on developing the language skills of writing, reading, listening and speaking towards achieving the level of borderline CEFR B2/A1 or IELTS 6.5.

### Summary of module content:

The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. During the module there will be a focus on developing academic writing and specialized reading, listening and speaking skills within a Business context. By the end of the module students should be functioning at least at IELTS 6.5 (borderline CEFR B2/A1).
The module therefore has a clear language and skills development focus but also aims to engage students directly with their business-related studies. This is achieved by putting language and skills acquisition firmly in a business context. The value of the generic study is immediately enhanced for the student by context. It also focuses the student on issues of importance to his or her degree studies by dealing with questions of sourcing and evaluating material, use of library and VLE, research skills and methods and oral as well as written communication in a business context.

The topics studied include contemporary business practice and issues, involving consideration of current business processes and culture, the growth of e-commerce and the impact of the Internet on businesses of different types, environmental concerns and the significance of ethical considerations and sustainability.

Students engage in research activity, identifying different source materials on the business topics of the day and learn about basic research methods including the quantitative and qualitative approaches.

Students also develop their communication skills by considering the part communication plays within a business in terms of meeting and negotiations skills, team-building and working as a member of a group, building relationships, networking, professional and social media sites.

**Intended Learning Outcomes**

By the end of this module, students will be able to
- Demonstrate a basic understanding of business models
- Demonstrate reading skills in the context of a range of sources of business news and information
- Show listening skills through the taking of detailed notes from spoken business source materials
- Demonstrate a basic knowledge of research methods in accessing, evaluating and recording information
- Demonstrate report writing skills by commenting on issues arising out of business case studies
- Demonstrate speaking skills by means of the delivery of a short presentation on business-related academic topic

**Usability and Relationship to other Modules**

English for Academic Purposes (Business Track) is a foundation module studied during the second semester by students on the Business Track of the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

**Assessment**

Type: Case Study - report and presentation
Indicative Length: 1500 words and 15 minutes presentation
Scope: Course Study related to material studied during the semester and covered by Learning Outcomes (i), (iv), (v) and (vi)
Weight: 50%

Type: Unseen Reading and Listening Examination
Scope: Demonstrates achievement of Learning Outcomes (ii) and (iii)
Indicative Duration: 2.5 hours
Weight: 50%
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<td>ENGLISH FOR ACADEMIC PURPOSES (COMPUTER SCIENCE TRACK)</td>
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**Module Components**

<table>
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<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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</tbody>
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**Module Coordinator**

- JUIC College Director
- Program Affiliation
  - JUIC International Foundation Year
  - Core module for the Computer Science Track, delivered during Semester Two of the Program
- Mandatory Status
  - Mandatory for students on the Computer Science Track during Semester Two of the JUIC International Foundation Year

**Entry Requirements**

**Pre-requisites**
- High School Diploma
- Successful completion of EAP (Generic) module in Semester One
- Co-requisites
  - None
- Knowledge, Abilities, or Skills
  - English level equivalent to CEFR B2/IELTS 6.0
  - Foundation level English language and academic study skills
- Frequency
  - Up to twice an academic year. Taught in Semester Two of the Program
- Duration
  - 14 week semester
- Forms of Learning and Teaching
  - Tutor-led but interactive classes (42 hours)
  - Directed and independent learning (83 hours)
- Workload
  - 125 hours

**Recommendations for Preparation**

Students taking this module will have attained an English level equivalent to CEFR B2/IELTS 6.0 by successful completion of the EAP (Generic) during Semester 1 of the JUIC International Foundation Year. Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

**Content and Educational Aims**

The aims of the module are to introduce and develop English language skills directly relevant to the academic study of Computer Science and through investigation of Computer Science both as an academic discipline and a profession. It also aims to introduce and develop students’ understanding of use of language in a work context relevant to Computer Science. Students explore and interpret relevant source materials and use these and other learning materials to develop the practice of using Computer Science case studies to enhance their understanding of how computing professionals work in practice. Throughout the module students work continually on developing the language skills of writing, reading, listening and speaking towards achieving the level of borderline CEFR B2/A1 or IELTS 6.5.

**Summary of module content:**

The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. During the module there will be a focus on developing academic writing and specialized reading, listening and speaking skills within a Computer Science context. By the end of the module students should be functioning at least at IELTS 6.5 (borderline CEFR B2/A1).

The module therefore has a clear language and skills development focus but also aims to engage students directly with their computing-related studies. This is achieved by putting language and skills acquisition firmly in a Computer Science context. The value of the generic study is immediately enhanced for the student by context. It also focuses the student on issues of importance to his or her degree studies by dealing with questions of sourcing and evaluating material, use of library and VLE, research skills and methods and oral as well as written communication in a Computer Science context.
The topics studied include contemporary practice and issues in the field of Computing involving consideration of current professional processes and culture, the deployment and use of the rapidly developing technology and how this might be applied to businesses and other organizations. It includes the concerns around the impact of computing projects on individual communities and the environment in general and around sustainability. Students consider these and other ethical considerations in the context of the planning and realization of relevant projects. Students learn of the role of professional organizations in maintaining professional standards.

Students also develop their communication skills by considering the part communication plays within a profession in terms of meeting and negotiations skills, team-building and working as a member of a group, building relationships, networking, professional and social media sites.

### Intended Learning Outcomes

By the end of this module, students will be able to

- Demonstrate a basic understanding of the professional context in which Computer Scientists work
- Demonstrate reading skills in the context of a range of sources of relevant materials and information
- Show listening skills through the taking of detailed notes from spoken source materials
- Demonstrate a basic knowledge of research methods in accessing, evaluating and recording information
- Demonstrate report writing skills by commenting on issues arising out of case studies drawing on real-life experience of computing professionals
- Demonstrate speaking skills by means of the delivery of a short presentation on an academic topic which is computing-related

### Usability and Relationship to other Modules

English for Academic Purposes (Computer Science Track) is a core module studied during the second semester by students on the Computer Science Track of the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

### Assessment

**Type:** Case Study - report and presentation  
**Indicative Length:** 1500 words and 15 minutes presentation  
**Scope:** Course Study related to material studied during the semester and covered by Learning Outcomes (i), (iv), (v) and (vi)  
**Weight:** 50%

**Type:** Unseen Reading and Listening Examination  
**Scope:** Demonstrates achievement of Learning Outcomes (ii) and (iii)  
**Indicative Duration:** 2.5 hours  
**Weight:** 50%
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<th>Module Name</th>
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| **ENGLISH FOR ACADEMIC PURPOSES**  
**INDUSTRIAL ENGINEERING TRACK** | To be confirmed | FOUNDATION | 5 |

**Module Components**

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<tr>
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<td>Seminar style classes</td>
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**Module Coordinator**
JUIC College Director

**Program Affiliation**
- JUIC International Foundation Year
- Core module for the Engineering Track, delivered during Semester Two of the Program

**Mandatory Status**
Mandatory for students on the Engineering Track during Semester Two of the JUIC International Foundation Year

**Entry Requirements**

**Pre-requisites**
- High School Diploma
- Successful completion of EAP (Generic) module in Semester One

**Co-requisites**
- None

**Knowledge, Abilities, or Skills**
- English level equivalent to CEFR B2/IELTS 6.0
- Foundation level English language and academic study skills

**Frequency**
Up to twice an academic year. Taught in Semester Two of the Program

**Forms of Learning and Teaching**
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

**Duration**
14 week semester

**Workload**
125 hours

**Recommendations for Preparation**
Students taking this module will have attained an English level equivalent to CEFR B2/IELTS 6.0 by successful completion of the EAP (Generic) during Semester One of the JUIC International Foundation Year. Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

**Content and Educational Aims**
The aims of the module are to introduce and develop English language skills directly relevant to the academic study of Industrial Engineering and through investigation of Industrial Engineering both as an academic discipline and a profession. It also aims to introduce and develop students’ understanding of use of language in a work context relevant to Industrial Engineering. Students explore and interpret relevant source materials and use these and other learning materials to develop the practice of using relevant case studies to enhance their understanding of how industrial engineers work in practice. Throughout the module students work continually on developing the language skills of writing, reading, listening and speaking towards achieving the level of borderline CEFR B2/A1 or IELTS 6.5.

Summary of module content:
The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. During the module there will be a focus on developing academic writing and specialized reading, listening and speaking skills within an Industrial Engineering context. By the end of the module students should be functioning at least at IELTS 6.5 (borderline CEFR B2/A1).

The module therefore has a clear language and skills development focus but also aims to engage students directly with their engineering-related studies. This is achieved by putting language and skills acquisition firmly in an Industrial Engineering context. The value of the generic study is immediately enhanced for the student by context. It also focuses the student on issues of importance to his or her degree studies by dealing with questions of sourcing and evaluating material, use of library and VLE, research skills and methods and oral as well as written communication in an Industrial Engineering context.
The topics studied include contemporary practice and issues in the field of Industrial Engineering involving consideration of current professional processes and culture, the development of the use of technology and the concerns around the impact of projects on individual communities and the environment in general and around sustainability. Students consider these and other ethical considerations in the context of the planning and realization of Engineering projects. Students learn of the role of professional organizations in maintaining professional standards.

Students also develop their communication skills by considering the part communication plays within a profession in terms of meeting and negotiations skills, team-building and working as a member of a group, building relationships, networking, professional and social media sites.

**Intended Learning Outcomes**

By the end of this module, students will be able to

- Demonstrate a basic understanding of the professional context in which Industrial Engineers work
- Demonstrate reading skills in the context of a range of sources of relevant materials and information
- Show listening skills through the taking of detailed notes from spoken source materials
- Demonstrate a basic knowledge of research methods in accessing, evaluating and recording information
- Demonstrate report writing skills by commenting on issues arising out of case studies drawing on real-life experience of industrial engineers
- Demonstrate speaking skills by means of the delivery of a short presentation on a relevant academic topic

**Usability and Relationship to other Modules**

English for Academic Purposes (Industrial Engineering Track) is a core module studied during the second semester by students on the Industrial Engineering Track of the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

**Assessment**

Type: Case Study - report and presentation
Indicative Length: 1500 words and 15 minutes presentation
Scope: Course Study related to material studied during the semester and covered by Learning Outcomes (i), (iv), (v) and (vi)
Weight: 50%

Type: Unseen Reading and Listening Examination
Scope: Demonstrates achievement of Learning Outcomes (ii) and (iii)
Indicative Duration: 2.5 hours
Weight: 50%
## Module Name
**ENGLISH FOR ACADEMIC PURPOSES (NATURAL SCIENCES TRACK)**

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<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<tbody>
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## Module Components

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<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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</table>

## Module Coordinator
**JUIC College Director**

- Program Affiliation:
  - JUIC International Foundation Year
  - Foundation module for the Natural Sciences Track, delivered during Semester Two of the Program

- Mandatory Status:
  - Mandatory for students on the Natural Sciences Track during Semester Two of the JUIC International Foundation Year

## Entry Requirements

<table>
<thead>
<tr>
<th>Pre-requisites</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Diploma</td>
<td>None</td>
<td>English level equivalent to CEFR B2/IELTS 6.0</td>
<td>Up to twice an academic year. Taught in Semester Two of the Program</td>
<td>Tutor-led but interactive classes (42 hours)</td>
<td>125 hours</td>
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<tr>
<td>Successful completion of EAP (Generic) module in Semester One</td>
<td></td>
<td>Foundation level English language and academic study skills</td>
<td></td>
<td>Directed and independent learning (83 hours)</td>
<td></td>
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</tbody>
</table>

## Recommendations for Preparation

Students taking this module will have attained an English level equivalent to CEFR B2/IELTS 6.0 by successful completion of the EAP (Generic) during Semester 1 of the JUIC International Foundation Year. Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

## Content and Educational Aims

The aims of the module are to introduce and develop English language skills directly relevant to the academic study of the Natural Sciences and through investigation of the Natural Sciences both as academic disciplines and professions. It also aims to introduce and develop students’ understanding of use of language in a work context relevant to the Natural Sciences. Students explore and interpret relevant source materials and use these and other learning materials to develop the practice of using scenarios within the individual Natural Sciences to enhance their understanding of how relevant professionals work in practice. Throughout the module students work continually on developing the language skills of writing, reading, listening and speaking towards achieving the level of borderline CEFR B2/A1 or IELTS 6.5.

Summary of module content:

The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. During the module there will be a focus on developing academic writing and specialized reading, listening and speaking skills within the context of the Natural Sciences. By the end of the module students should be functioning at least at IELTS 6.5 (borderline CEFR B2/A1).

The module therefore has a clear language and skills development focus but also aims to engage students directly with their science-related studies. This is achieved by putting language and skills acquisition firmly in a Natural Sciences context. The value of the generic study is immediately enhanced for the student by context. It also focuses the student on issues of importance to his or her degree studies by dealing with questions of sourcing and evaluating material, use of library and VLE, research skills and methods and oral as well as written communication in a Natural Sciences context.
The topics studied include contemporary practice and issues in the field of the Natural Sciences involving consideration of current professional processes and culture, including the deployment and use of rapidly developing technology. It places the work of professionals open to students of the Natural Sciences in the context of their impact on individuals and communities and, in the context of research on the environment in general and around sustainability. Students consider these and other ethical considerations in the context of the planning and realization of relevant projects. Students learn of the role of professional organizations in maintaining professional standards.

Students also develop their communication skills by considering the part communication plays within a profession in terms of meeting and negotiations skills, team-building and working as a member of a group, building relationships, networking, professional and social media sites.

**Intended Learning Outcomes**

By the end of this module, students will be able to

- Demonstrate a basic understanding of the professional context in which Natural Scientists work
- Demonstrate reading skills in the context of a range of sources of relevant materials and information
- Show listening skills through the taking of detailed notes from spoken source materials
- Demonstrate a basic knowledge of research methods in accessing, evaluating and recording information
- Demonstrate report writing skills by commenting on issues arising out of case studies drawing on real-life experience of professionals who have come to their roles via the Natural Sciences
- Demonstrate speaking skills by means of the delivery of a short presentation on an academic topic which is science-related

**Usability and Relationship to other Modules**

English for Academic Purposes (Natural Sciences Track) is a foundation module studied during the second semester by students on the Natural Sciences Track of the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

**Assessment**

Type: Case Study - report and presentation
Indicative Length: 1500 words and 15 minutes presentation
Scope: Course Study related to material studied during the semester and covered by Learning Outcomes (i), (iv), (v) and (vi)
Weight: 50%

Type: Unseen Reading and Listening Examination
Scope: Demonstrates achievement of Learning Outcomes (ii) and (iii)
Indicative Duration: 2.5 hours
Weight: 50%
Module Name
ENGLISH FOR ACADEMIC PURPOSES (SOCIAL SCIENCES TRACK)

Module Code
To be confirmed

Level (type)
FOUNDATION

ECTS
5

Module Components

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<th>Type</th>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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Module Coordinator
JUIC College Director

Program Affiliation
- JUIC International Foundation Year
- Foundation module for the Social Sciences Track, delivered during Semester Two of the Program

Mandatory Status
Mandatory for students on the Social Sciences Track during Semester Two of the JUIC International Foundation Year

Entry Requirements

Pre-requisites
- High School Diploma
- Successful completion of EAP (Generic) module in Semester One

Co-requisites
- None

Knowledge, Abilities, or Skills
- English level equivalent to CEFR B2/IELTS 6.0
- Foundation level English language and academic study skills

Frequency
- Up to twice an academic year. Taught in Semester Two of the Program

Duration
- 14 week semester

Forms of Learning and Teaching
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

Workload
- 125 hours

Recommendations for Preparation
Students taking this module will have attained an English level equivalent to CEFR B2/IELTS 6.0 by successful completion of the EAP (Generic) during Semester 1 of the JUIC International Foundation Year. Preparation prior to commencing the module would include an outline list of the topics to be studied and a supporting reading list.

Content and Educational Aims
The aims of the module are to introduce and develop English language skills directly relevant to the academic study of the Social Sciences and through academic investigation into the appropriate professional environment. Students explore and interpret relevant source materials and use these and other learning materials to develop the practice of using real-life case studies to enhance their understanding of how professionals in the Social Sciences work in practice. Throughout the module students work continually on developing the language skills of writing, reading, listening and speaking towards achieving the level of borderline CEFR B2/A1 or IELTS 6.5.

Summary of module content:
The language learning content is skills based and maps against IELTS level descriptors for Band 6 in Writing, Reading, Listening and Speaking. During the module there will be a focus on developing academic writing and specialized reading, listening and speaking skills within the context of the Social Sciences. By the end of the module students should be functioning at least at IELTS 6.5 (borderline CEFR B2/A1).

The module therefore has a clear language and skills development focus but also aims to engage students directly with their academic studies. This is achieved by putting language and skills acquisition firmly in a Social Sciences context. The value of the generic study is immediately enhanced for the student by context. It also focuses the student on issues of importance to his or her degree studies by dealing with questions of sourcing and evaluating material, use of library and VLE, research skills and methods and oral as well as written communication in a Social Sciences context.

The topics studied include working in a contemporary professional context, involving consideration of appropriate conduct within a professional culture, basic research methods including both qualitative and quantitative approaches. Their researches include use of the Internet and research undertaken through field
In this context students reflect on the importance of ethical considerations and need for confidentiality in undertaking research, working with clients and presenting findings. Students learn how to evaluate a wide range of materials and information critically.

Students also develop their communication skills by considering the part communication plays within a professional context in terms of meeting and negotiations skills, team-building and working as a member of a group, building relationships, networking, professional and social media sites.

### Intended Learning Outcomes
By the end of this module, students will be able to

- Demonstrate a basic understanding of the professional contexts within which social scientists work
- Demonstrate reading skills in the context of a range of sources of materials and information relevant to their field of study
- Show listening skills through the taking of detailed notes from spoken source materials
- Demonstrate a basic knowledge of research methods in accessing, evaluating and recording information and applying appropriate ethical concerns
- Demonstrate report writing skills by commenting on issues arising out of real-life or simulated case studies
- Demonstrate speaking skills by means of the delivery of a short presentation on an academic topic related to the Social Sciences

### Usability and Relationship to other Modules
English for Academic Purposes (Social Sciences Track) is a foundation module studied during the second semester by students on the Social Sciences Track of the JUIC International Foundation Year. Students are required to pass the module with at least 45% in order to pass the International Foundation Year overall and be able to move on to degree studies at Jacobs University.

### Assessment

**Type:** Case Study - report and presentation  
**Indicative Length:** 1500 words and 15 minutes presentation  
**Scope:** Course Study related to material studied during the semester and covered by Learning Outcomes (i), (iv), (v) and (vi)  
**Weight:** 50%

**Type:** Unseen Reading and Listening Examination  
**Scope:** Demonstrates achievement of Learning Outcomes (ii) and (iii)  
**Indicative Duration:** 2.5 hours  
**Weight:** 50%
SUBJECT AREA MODULES

Subject area Business

<table>
<thead>
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<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
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<td>Name</td>
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</tr>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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<th>Program Affiliation</th>
<th>Mandatory Status</th>
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<td>Mandatory for progression</td>
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<td>Director</td>
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<td>to specified degrees via the</td>
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<tr>
<th>Entry Requirements</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
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<tbody>
<tr>
<td>Pre-requisites</td>
<td>□ High School Diploma</td>
<td>▪ A solid background in Mathematics</td>
<td>Up to twice an</td>
<td>▪ Tutor-led but interactive classes (42 hours)</td>
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<tr>
<td></td>
<td>□ None</td>
<td>▪ Basic IT skills</td>
<td>academic year</td>
<td>▪ Directed and independent learning (83 hours)</td>
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<table>
<thead>
<tr>
<th>Duration</th>
<th>Workload</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>14 week semester</td>
<td>125 hours</td>
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</table>

Recommendations for Preparation

Students are unlikely to have undertaken formal prior study of Business subjects but will have engaged in other fields of study which develop similar skills sets in researching and evaluating evidence and being able to synthesize materials from various sources and use the resulting synthesis to express a view. They will also have studied Mathematics, which will help them in the analytical work required in the study of a number of Business subjects. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

Content and Educational Aims

The overall aim of this module is to provide students with a general introduction to the study of business by introducing the different aspects a firm has to cope with such as organization, strategic management, financial management, marketing, human resource management, business processes, corporate social responsibility, and legal foundations. The course covers the different types of businesses, from start-ups, over small and medium sized companies to multinational enterprises.

The main topics covered in the module are:
- Types of business, ownership and organisation; starting a business and the ways in which a business may be financed and managed
- Defining and classifying business organisations, contrasting and comparing organisations in the private, public and not-for-profit sectors
- Organisational structures, strategic planning, quality control
- Human Resource Management, role and standard functions; managing change and resolving conflict in the workplace
- The marketing function within a business; marketing goals and structures and simple strategic analysis of the marketing environment
- Customer service and understanding buyer behaviour; market research and the positioning of products
### Intended Learning Outcomes
By the end of this module, students will be able to:
- Demonstrate an understanding of the different types of businesses and how they are financed
- Explain how business managers undertake strategic planning
- Demonstrate an understanding of the importance of the marketing function within a business and how businesses develop marketing and sales strategies
- Evaluate the factors governing effective marketing of a product such as market research, positioning, pricing, and promotional activities
- Explain the function of an HRM department within a business
- Demonstrate an understanding of how businesses respond to change

### Usability and Relationship to other Modules
Foundation Business is a pathway specific module on the JUIC Business subject area and with the other modules on this pathway provides an appropriate preparation for students wishing to study specified Business-related degrees at Jacobs University. At least a 45% pass is required in this module for students to complete their chosen subject area successfully.

### Assessment
Type: Case study based on the development and marketing of a product  
Duration/Length: 1000 words  
Weight 40%  
Scope: Covers topics relevant to the achievement of Learning Outcomes (ii), (iii) and (iv)

Type: Unseen examination  
Duration/Length: 2 hours  
Weight 60%  
Scope: Covers Learning Outcomes, (i), (iii), (v) and (vi)
### Module Name

**STATISTICS FOR BUSINESS AND THE SOCIAL SCIENCES**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be confirmed</td>
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</tbody>
</table>

### Module Components

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
</tr>
</tbody>
</table>

### Module Coordinator

**JUIC College Director**

### Program Affiliation

- JUIC International Foundation Year
- Specific to the Business and Social Sciences subject areas

### Mandatory Status

Mandatory for progression to specified degrees via the Business and Social Sciences subject areas

### Entry Requirements

**Pre-requisites**

- ☒ High School Diploma
- ☐ None

<table>
<thead>
<tr>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ None</td>
<td>A basic theoretical understanding of Mathematics</td>
<td>Up to twice an academic year</td>
<td>Tutor-led but interactive classes (42 hours)</td>
<td>14 week semester</td>
<td>125 hours</td>
</tr>
<tr>
<td></td>
<td>Practical skills in the presentation and application of mathematical data</td>
<td></td>
<td>Directed and independent learning (83 hours)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Recommendations for Preparation

Students require strong background in Mathematics through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the term and refresh the students' knowledge of the mathematical aspects of the module, while introducing them to elements of the module, such as the study of Statistics, which may not be familiar to all students.

### Content and Educational Aims

This module builds on prior studies of Mathematics at high school and equips students with technical tools and skills that they will need for their later degrees in Business or other Social Sciences. The module covers mathematical calculation, statistical methods, as well as presentation and interpretation skills of statistical data. Moreover, it supports students to develop critical skills in assessing the reliability of data that is presented to them. The math on this module is related specifically to business and other social science context, examples used in teaching are drawn from real life scenarios that arise in these fields.

The content of the module includes:

- Numbers, decimals, averages, percentages, ratios, fractions, approximations
- Formulae – for calculating areas, circumferences, statistical formulae
- Statistical measures – mean, mode, median, quartiles, interquartile ranges
- Understanding, critiquing and using sampling methods
- Understanding and testing for differences
- Evaluating strengths, weaknesses and suitability of data
- Interpreting, analysing and comparing distributions in data sets
- Understanding regression
- Algebra
- Simultaneous and quadratic equations
- Diagrammatic representations: charts, graphs, frequency diagrams, using computer packages
### Money management: wages and tax, budgets, rent, utility bills, national contributions, calculation of interest, savings and investments, exchange rates

### Intended Learning Outcomes

By the end of this module, students will be able to

- Demonstrate knowledge and understanding of fundamental mathematical terminology and calculations
- Demonstrate the ability to understand and solve mathematical problems using appropriate techniques both mentally and with a calculator
- Demonstrate understanding of a range of statistical techniques and their application to a range of real life and study of Business or the Social Sciences as well as their limitations
- Use statistical problem-solving techniques to prepare, analyse and interpret data in the context of a case study drawn from a Business or Social Sciences context

### Usability and Relationship to other Modules

Statistics for Business and the Social Sciences is a pathway specific module on the JUIC Business and Social Sciences subject areas and with the other modules on these subject areas provides an appropriate preparation for students wishing to study specified Business or Social Sciences degrees at Jacobs University. At least a 45% pass is required in this module for students to complete their chosen subject area successfully

### Assessment

Type: Unseen examination  
Duration/Length: 2 hours  
Scope: Theory studied as covered by Learning Outcomes (i) to (iii)  
Weight: 60%

Type: Case study providing opportunity to demonstrate gathering, analysis and presentation of statistical information relevant to future studies in Business and/or the Social Sciences  
Scope: Demonstrates achievement of Learning Outcome (iv) – Length (for guidance) 1000 words  
Weight: 40%
# Module Name
**FINANCIAL ACCOUNTING**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
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## Module Components

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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## Module Coordinator
**JUIC College Director**

<table>
<thead>
<tr>
<th>Program Affiliation</th>
<th>Mandatory Status</th>
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</thead>
<tbody>
<tr>
<td>JUIC International Foundation Year</td>
<td></td>
</tr>
<tr>
<td>Specific to the Business subject area</td>
<td>Mandatory for progression to specified degrees via the Business subject area</td>
</tr>
</tbody>
</table>

## Entry Requirements
**Pre-requisites**
- High School Diploma
- None

<table>
<thead>
<tr>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>A solid background in Mathematics Basic IT skills</td>
<td>Up to twice an academic year</td>
<td>Tutor-led but interactive classes (42 hours) Directed and independent learning (83 hours)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 week semester</td>
<td>125 hours</td>
</tr>
</tbody>
</table>

## Recommendations for Preparation

Students are unlikely to have undertaken formal prior study of Financial Accounting, but will have studied Mathematics and IT, which will help them in the analytical work, calculations and presentation of data required in their study of Accounting. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

## Content and Educational Aims

This module aims to introduce students to the basic mechanics and processes of financial accounting in both theory and practice, including bookkeeping. It further helps students to understand the importance of financial accounting procedures and the resulting financial statements for running a business.

The module content includes:
- Accounting records and their importance to commercial operations in terms of monitoring a company’s performance and determining its sustainability
- Source materials and their use in preparing journals/day-books and ledger accounts
- Recording credit and cash transactions using the system of double-entry bookkeeping; checking accuracy and preparing a trial balance
- Calculation of some key ratios and using these to interpret a basic Statement of Financial Position and Income Statement
- Trading and profit and loss accounts, depreciation, stock inventories
### Intended Learning Outcomes

By the end of this module, students will be able to
- Demonstrate an understanding of basic theory, practice and terms of financial accounting
- Explain the uses and value of financial accounting to a business
- Use double-entry bookkeeping to record financial transactions of a company and prepare a trial balance
- Use key ratios to interpret Statement of Financial Position and Income Statement
- Demonstrate how specialist software supports the contemporary accounting function.

### Usability and Relationship to other Modules

Financial Accounting is a pathway specific module on the JUIC Business subject area and with the other modules on this subject area provides an appropriate preparation for students wishing to study specified Business-related degrees at Jacobs University. At least a 45% pass is required in this module for students to complete their chosen subject area successfully.

### Assessment

**Type:** Coursework essay on the importance of preparation of accurate accounts to a business  
Duration/Length: 1,000 words  
Weight 30%  
Scope: Covers topics relevant to the achievement of Learning Outcomes (i), and (ii)

**Type:** Examination on process of preparing company accounts  
Duration/Length: 2 hours  
Weight 70%  
Scope: Covers Learning Outcomes, (i), (iii), (iv) and (v)
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<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>FOUNDATION ECONOMICS</td>
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<td>FOUNDATION (SUBJECT AREA SPECIFIC)</td>
<td>5</td>
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</table>

### Module Components

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
</tr>
</tbody>
</table>

### Program Affiliation

- JUIC International Foundation Year
- Specific to the Business, Industrial Engineering and Social Sciences subject areas

### Mandatory Status

Mandatory for progression to specified degrees via the Business, Industrial Engineering and Social Sciences subject areas

### Entry Requirements

- **Pre-requisites**
  - High School Diploma
  - None

### Co-requisites

- None

### Knowledge, Abilities, or Skills

- A solid background in Mathematics
- Ability to research, evaluate and express opinions

### Frequency

- Up to twice an academic year

### Forms of Learning and Teaching

- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

### Duration

- 14 week semester

### Workload

- 125 hours

### Recommendations for Preparation

Students are unlikely to have undertaken formal prior study of Economics but will have engaged in other fields of study, which develop similar skills sets in uncovering and evaluating evidence and being able to synthesize material and use this synthesis to express an informed and balanced view. They will also have studied Mathematics, which will help them in the modelling and analytical work required in the study of Economics. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

### Content and Educational Aims

This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.

The content of the module includes:

- Explanation of the terms, Political Economy, Macroeconomics and Microeconomics
- Basic concepts and terms in study of economic theory - the role of money in society, demand and supply; the operation of price mechanism; elasticity. productivity, division of labour and economies of scale
- Underuse and full use of economic resources; scarcity, choice and allocation
- Internal organisation and management of business firms and their external behaviour in relations to the market; the interests of stakeholders; agency theory, Economic aspects of production, distribution and consumption of goods and services Reasons for market failure; excess of demand or supply; equilibrium and disequilibrium; interrelationship between markets; misallocation of resources
- Public and private goods; merit and demerit goods; monopoly; reasons for, nature and impact of government intervention, generally and in relation to the banking crisis in 2008 and the pandemic in 2020.
**Intended Learning Outcomes**
By the end of this module, students will be able to
- Demonstrate an understanding of the key economic concepts and terminology
- Describe and explain the way in which firms organise themselves, develop their business strategy and relate to the market
- Demonstrate an understanding of the interplay of objectives and priorities between business stakeholders
- Explain the factors that determine the successful operation of a market economy and explain the reasons for market failure
- Explain the reasons for and consequences of government intervention in the market

**Usability and Relationship to other Modules**
Foundation Economics is a pathway specific module on the JUIC Business, Industrial Engineering and Social Sciences subject areas and with the other modules on these subject areas provides an appropriate preparation for students wishing to study specified degrees at Jacobs University. At least a 45% pass is required in this module for students to complete their chosen subject area successfully

**Assessment**
- **Type:** Case study/simulation illustrating the priorities and interactions between stakeholders and management in a business firm
  - **Duration/Length:** 1000 words
  - **Weight:** 40%
  - **Scope:** Covers topics relevant to the achievement of Learning Outcomes (ii), and (iii)
- **Type:** Unseen examination – basic economics terminology and theories
  - **Duration/length:** 2 hours
  - **Weight:** 60%
  - **Scope:** Covers Learning Outcomes, (i), (iv) and (v)
## Subject area Computer Science

### Module Name

**FUNDAMENTALS OF PROGRAMMING WITH PYTHON 3**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>To be confirmed</td>
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### Module Components

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</tr>
<tr>
<td>tbc</td>
<td>Workshop (computer laboratory) sessions</td>
<td>Practical</td>
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</table>

#### Module Coordinator

**JUIC College Director**

**Program Affiliation**
- JUIC International Foundation Year
- Specific to the Computer Science subject area

**Mandatory Status**
- Mandatory for progression to specified degrees via the Computer Science subject area

#### Entry Requirements

**Pre-requisites**
- High School Diploma
- None

<table>
<thead>
<tr>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Practical IT skills</td>
</tr>
<tr>
<td>None</td>
<td>Sound knowledge of high school mathematics</td>
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</tbody>
</table>

#### Frequency

- Up to twice an academic year

#### Forms of Learning and Teaching

- Tutor-led but interactive classes with a strong practical element (20 hours)
- Sessions undertaking practical work (22 hours)
- Directed and independent learning (83 hours)

#### Duration

**14 week semester**

#### Workload

125 hours

### Recommendations for Preparation

Students require basic skills in working with computers and some understanding of the practical applications of specialized software through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the semester and refresh the students’ knowledge of the background to the Computing work found in the module. It is appreciated that some students will be familiar with the practical use of computers in supporting their studies but may not have had formal classes in Computing prior to their commencement of the Program.

### Content and Educational Aims

This module introduces students to the process of programming. The general principles of the Python 3 programming language are outlined and then students develop their programming skills by learning to program using Python 3. The teaching approach will involve some theory and trouble-shooting sessions but will feature a significant number of hours engaged in the practical work involved in learning and working with Python 3.

The content of the module includes:
- Introduction to the purpose of programming and the way in which a programming language makes this achievable
- The development of Python as a programming language and version 3; an appreciation of Python as an accessible and user-friendly language with uncluttered syntax and grammar, and highly extensible
- Object-oriented and structural programming supported by Python 3
- Examples of application and use of Python 3
- Workshop sessions learning to program with Python 3
- Practical exercises in the use of Python 3 to provide programming solutions to basic problems
**Intended Learning Outcomes**

By the end of this module, students will be able to
- Demonstrate an understanding of the concept of variables and expressions
- Demonstrate an understanding of basic data types and how they are used
- Demonstrate an understanding of control flow constructs, for example, loops, conditional statements
- Structure a program by implementing reusable functions
- Demonstrate an understanding of basic object-oriented concepts such as classes and methods

**Usability and Relationship to other Modules**

Fundamentals of Programming with Python 3 is a pathway specific module on the JUIC Computer Science Subject Area and with the other modules on this pathway provides an appropriate preparation for students wishing to study Computer Science-related degrees at Jacobs University.

**Assessment**

Type: Portfolio of coursework tasks around programming in general and using Python 3 in particular
Duration/Length: 2000 words (as a guide only)
Scope: Demonstrates through a mix of written and practical tasks achievement of Learning Outcomes (i) to (v)
Weight 100%

At least a 45% pass is required in this module for students to complete their chosen subject area successfully
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>MATHEMATICS FOR COMPUTER SCIENCE</td>
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<td>FOCUS (SUBJECT AREA SPECIFIC)</td>
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</table>

**Module Components**

<table>
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<th>Number</th>
<th>Name</th>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
</tr>
</tbody>
</table>

**Module Coordinator**

JUIC College Director

**Program Affiliation**

- JUIC International Foundation Year
- Specific to the Computer Science subject area

**Mandatory Status**

Mandatory for progression to specified degrees via the Computer Science subject area

**Entry Requirements**

**Pre-requisites**

- ☒ High School Diploma
- ☐ None

**Co-requisites**

- ☐

**Knowledge, Abilities, or Skills**

- A basic theoretical understanding of Mathematics
- Practical skills in the presentation and application of data

**Frequency**

- Up to twice an academic year
- 14 week semester

**Forms of Learning and Teaching**

- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

**Duration**

125 hours

**Recommendations for Preparation**

Students require a strong background in Mathematics through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the term and refresh the students’ knowledge of the mathematical aspects of the module.

**Content and Educational Aims**

This module builds on the core module of Mathematics offered during the first semester. It provides students with a grounding in mathematical structures and techniques commonly used to describe, analyse and reason about data structures and algorithms. It also introduces students to the mathematical foundations of computing systems.

The content of the module includes:

- Introduction and use of graphs and digraphs
- Fundamentals of sets and how to use them
- Building Venn diagrams
- Probability and data analysis – histograms, standard deviation, normal and binomial distribution; use of appropriate software to facilitate data collection and analysis
- Vector algebra – introduction, Cartesian components and position vectors; scalar and vector quantities; matrices; vector products
- Concepts of Boolean algebra and Karnaugh maps in solving logic problems
- Linear Difference equations in various situations
- Theory and application of Differentiation

**Intended Learning Outcomes**

By the end of this module, students will be able to:

- Demonstrate an understanding of graphs and digraphs, use of sets and Venn diagrams
- Demonstrate the ability to gather, interpret and manipulate statistical data related to their field of study
- Demonstrate an understanding of vector algebra
- Perform basic matrix and vector operations
| to explain elementary Boolean laws and use Karnaugh maps to solve basic logic problems;  
| to describe how differentiation can be applied to find maxima and minima. |

**Usability and Relationship to other Modules**  
Mathematics for Computer Science is a pathway specific module on the JUIC Computer Science Subject Area and with the other modules on this pathway provides an appropriate preparation for students wishing to study Computer Science-related degrees at Jacobs University.

**Assessment**

Type: Interim Test  
Duration/Length: 1.5 hours  
Scope: Theory studied as covered by Learning Outcomes (i) and (ii)  
Weight: 40%

Type: Unseen examination  
Scope: Demonstrates achievement of Learning Outcomes (iii), (iv), (v), and (vi)  
Duration/Length: 2 hours  
Weight: 60%

At least a 45% pass is required in this module for students to complete their chosen subject area successfully.
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Module Components</th>
</tr>
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<tr>
<td><strong>Number</strong></td>
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<tr>
<td>tbc</td>
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<table>
<thead>
<tr>
<th>Module Coordinator</th>
</tr>
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<tbody>
<tr>
<td>JUIC College Director</td>
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<th>Program Affiliation</th>
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<tbody>
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<td>Specific to the Computer Science subject area</td>
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<table>
<thead>
<tr>
<th>Mandatory Status</th>
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<tbody>
<tr>
<td>Mandatory for progression to specified degrees via the Computer Science subject area</td>
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<table>
<thead>
<tr>
<th>Entry Requirements</th>
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<tbody>
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<td><strong>Pre-requisites</strong></td>
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<table>
<thead>
<tr>
<th>Co-requisites</th>
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</thead>
<tbody>
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<td>None</td>
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<table>
<thead>
<tr>
<th>Knowledge, Abilities, or Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical IT skills</td>
</tr>
<tr>
<td>Programming with Python 3</td>
</tr>
<tr>
<td>A sound understanding of high school mathematics</td>
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</table>

<table>
<thead>
<tr>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to twice an academic year</td>
</tr>
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<table>
<thead>
<tr>
<th>Forms of Learning and Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor-led but interactive classes with a strong practical element (42 hours)</td>
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<tr>
<td>Directed and independent learning (83 hours)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 week semester</td>
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</table>

<table>
<thead>
<tr>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 hours</td>
</tr>
</tbody>
</table>

**Recommendations for Preparation**

Students require basic skills in working with computers and some understanding of the practical applications of specialized software through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the semester and refresh the students’ knowledge of the background to the Computing work found in the module. It is appreciated that some students will be familiar with the practical use of computers in supporting their studies but may not have had formal classes in Computing prior to their commencement of the Program.

**Content and Educational Aims**

This module aims to introduce students to the notion of problem solving employing a range of techniques including writing simple computer programs. It provides students with a basic understanding of algorithms and their uses. Students will gain the experience of developing simple software programs written in Python 3 to solve particular problems. The overall aim is to develop transferable skills which will benefit the students when they study for a computing degree in the future.

The content of the module includes:

- Problem solving techniques
- Data capture, handling and representation
- Construction and use of algorithms
- Solution of typical algorithmic problems such as the n-queens problem and the Towers of Hanoi
- Logical and computational thinking; Binary Trees
- Refresher on the use of Python 3 as a programming language
- Construction of simple software programs in Python 3 to solve particular problems
### Intended Learning Outcomes
By the end of this module, students will be able to
- Use problem solving techniques, including logical and computational thinking to present solutions to problems set by their tutor
- Explain the importance of techniques associated with data capture and representation
- Demonstrate an understanding of the construction of and use of algorithms
- Construct simple software programs in Python 3
- Demonstrate how problem-solving techniques can be implemented to solve specific problems

### Usability and Relationship to other Modules
Problem Solving is a pathway specific module on the JUIC Computer Science subject area and with the other modules on this pathway provides an appropriate preparation for students wishing to study Computer Science-related degrees at Jacobs University.

### Assessment
Type: Portfolio of four coursework tasks set during the term  
Duration/Length: 2000 words  
Weight: 100%  
Scope: Covers topics relevant to the achievement of Learning Outcomes (i) to (v)

At least a 45% pass is required in this module for students to complete their chosen subject area successfully
## Module Name
**COMPUTER SYSTEMS**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be confirmed</td>
<td>FOCUS (SUBJECT AREA SPECIFIC)</td>
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### Module Components

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</tbody>
</table>

### Program Affiliation
- JUIC International Foundation Year
- Specific to the Computer Science subject area

### Mandatory Status
Mandatory for progression to specified degrees via the Computer Science subject area

### Entry Requirements

<table>
<thead>
<tr>
<th>Pre-requisites</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Diploma</td>
<td>None</td>
<td>Practical IT skills</td>
<td>Up to twice an academic year</td>
<td>Tutor-led but interactive classes with a strong practical element (42 hours)</td>
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<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td>Directed and independent learning (83 hours)</td>
</tr>
</tbody>
</table>

### Frequency
- 14 week semester
- 125 hours workload

### Recommendations for Preparation
Students will have arrived with some basic skills in working with computers and specialized software through their studies in high school or elsewhere. This will have been consolidated and extended by the students’ completion of the Programming module in semester one. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the semester and refresh the students’ background knowledge of Computer Science.

### Content and Educational Aims
This module introduces students to the structure and components of a computer system and the key components and responsibilities of an operating system. Providing students with an understanding of how computers and their operating systems work will equip them with a good grounding for their degree studies.

The content of the module includes:
- Central Processing Unit (CPU) – the von Neumann (Princeton) and Harvard models
- Definitions and uses of memory and the bus (communications) system,
- Different technologies used to connect peripherals
- Binary data representation
- Role of an operating system from a Programmer’s perspective
- Introduction to Linux system (overview of shell commands)
- Introduction to editors for Programmers
- Introduction to virtualization tools like VirtualBox, enabling students to run different operating systems for different purposes on their hardware
**Intended Learning Outcomes**
By the end of this module, students will be able to
- Explain in general terms the components of a computer system
- Provide definitions and describe uses of a CPU, memory and the bus system
- Describe the different technologies available to connect peripherals
- Explain binary data representation
- Demonstrate an understanding of the Linux system
- Use an editor that supports Programs
- Demonstrate an understanding of virtualization tools and of how they may benefit the user

**Usability and Relationship to other Modules**
Computer Systems is a pathway specific module on the JUIC Computer Science subject area and with the other modules on this pathway provides an appropriate preparation for students wishing to study Computer Science-related degrees at Jacobs University.

**Assessment**
Type: Interim Theory Test  
Scope: Covers topics relevant to the achievement of Learning Outcomes (i), (ii), (iii) and (iv)  
Duration/Length: 1 hour  
Weight 30%

Type: Coursework Report on how to achieve maximum benefits from computer systems  
Scope: Covers topics related to Learning Outcomes (v), (vi) and (vii)  
Duration/length: 2000 words  
Weight 70%

At least a 45% pass is required in this module for students to complete their chosen subject area successfully
Subject area Industrial Engineering

Module Name
FUNDAMENTALS OF INDUSTRIAL ENGINEERING, LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Module Code
To be confirmed

Level (type)
FOCUS (SUBJECT AREA SPECIFIC)

ECTS
5

Module Components

<table>
<thead>
<tr>
<th>Number</th>
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<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
</tr>
</tbody>
</table>

Program Affiliation
- JUIC International Foundation Year
- Specific to the Industrial Engineering subject area

Module Coordinator
JUIC College Director

Mandatory Status
Mandatory for progression to specified progression degree available via the Industrial Engineering subject area

Entry Requirements
Pre-requisites
☑ High School Diploma
☐ None

Co-requisites
☐ None

Knowledge, Abilities, or Skills
- A basic theoretical understanding of Mathematics and the Sciences gained during prior studies
- Basic IT skills

Frequency
Up to twice an academic year

Forms of Learning and Teaching
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

Duration
14 week semester

Workload
125 hours

Recommendations for Preparation
Students require a basic background in Mathematics and the Physical Sciences through their studies in high school or elsewhere. The scientific background is likely to be purely theoretical. Preparation prior to arrival would include a reading list to help introduce the topics to be studied during the semester and develop the students’ understanding of the fundamentals of the subject. In their early classes post-arrival arrival students are introduced to the framework of the module and the demands that it will place on them.

Content and Educational Aims
This module introduces students to the fundamentals of industrial engineering as these apply to the practical problems of logistics in a business context, particularly to managing the supply chain that is critical for many businesses. They will learn the basic terminology employed in this field of study and begin to understand the efforts which companies make to manage the interconnected networks of individuals and suppliers responsible for product or service creation, procurement, manufacturing assembly and the flow of materials and products from the point of origin to the point of consumption. Students learn how this approach to creating shorter cycle times is important to businesses keen to control costs while maximizing service levels.

In summary, the module includes:
- The origins of the study of industrial engineering
- The basic principles of encouraging interconnectivity between individuals, resources, systems, information, materials to ensure these complex interactions work to the benefit of the businesses involved
- Simulation to illustrate the need for this consolidation of differing functions, for example, through a bridge-building game
- The introduction of basic planning exercises and operational charts to demonstrate the fundamentals of logistics
- The principles of supply chain management; the development of notion of ‘Just In Time’ (JIT) in manufacturing and materials distribution; notions of supplier management, order processing and transport economics
- Benefits to businesses and to the wider community through green logistics
- Analytical and problem-solving skills
### Intended Learning Outcomes
By the end of this module, students will be able to
- Demonstrate an understanding of the basic terms and concepts of Industrial Engineering
- Demonstrate an understanding of the main terms and processes involved in logistics and efficient supply chain management
- Deploy analytical and problem-solving skills in a simulated exercise
- Demonstrate an understanding of the importance of SCM and Logistics to achieving business objectives

### Usability and Relationship to other Modules
Fundamentals of Industrial Engineering, Logistics and SCM is a pathway specific module on the JUIC Industrial Engineering subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study the degree in Industrial Engineering and Management at Jacobs University.

### Assessment
Type: Interim examination  
Duration/Length: 1 hour  
Scope: Theory studied as covered by Learning Outcomes (i), (ii) and (iv)  
Weight: 30%

Type: Report on a Planning Exercise arising out of a company scenario  
Scope: Demonstrates achievement of Learning Outcome (iii), (iv), (v) and (vi) – Length (for guidance) 1500 words  
Weight: 70%

At least a 45% pass is required in this module for students to complete the subject area successfully.
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<table>
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<table>
<thead>
<tr>
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<th>Program Affiliation</th>
<th>Mandatory Status</th>
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<tbody>
<tr>
<td>JUIC College Director</td>
<td>▪ JUIC International Foundation Year</td>
<td>Mandatory for progression to specified degrees via the Industrial Engineering subject area</td>
</tr>
<tr>
<td></td>
<td>▪ Specific to the Industrial Engineering subject area</td>
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</table>

<table>
<thead>
<tr>
<th>Entry Requirements</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Duration</th>
<th>Workload</th>
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<tr>
<td>Pre-requisites</td>
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<td></td>
<td></td>
<td></td>
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<td>125 hours</td>
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<tr>
<td></td>
<td></td>
<td>Knowledge, Abilities, or Skills</td>
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<td></td>
<td>semester</td>
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<tr>
<td>□ High School Diploma</td>
<td>□ None</td>
<td>▪ A basic theoretical understanding of Mathematics</td>
<td>Up to twice an academic year</td>
<td>▪ Tutor-led but interactive classes (42 hours)</td>
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<tr>
<td>□ None</td>
<td>□ None</td>
<td>▪ Practical skills in the presentation and application of data</td>
<td></td>
<td>▪ Directed and independent learning (83 hours)</td>
<td></td>
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</tbody>
</table>

Recommendations for Preparation
Students require strong background in Mathematics and the Sciences through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the semester and refresh the students’ knowledge of the background to the Mathematics found in the module.

Content and Educational Aims
Students learn how to apply basic rules and techniques of integral and differential calculus. They study number systems, integers, rational and real numbers, examples of the use of the functions of two variables, probability and statistics, including histograms, standard deviation and normal and binomial distribution, and the definition and operation of matrices and vectors.

The content of the module includes:
▪ Review of basic work, previously undertaken, in algebra
▪ Matrix algebra: number systems, integers, rationals and real numbers
▪ Examples of the functions of two variables
▪ Definitions of and operations on matrices and vectors
▪ Probability and statistics – histograms, standard deviation, normal and binomial distribution; use of appropriate software
Intended Learning Outcomes
By the end of this module, students will be able to
- Demonstrate an understanding of mathematical terminology, notation, conventions and units
- Demonstrate an ability to interpret in mathematical terms verbal, graphical and tabular information
- Manipulate mathematical expressions and apply mathematical methods and techniques to problem solving and interpretation of mathematical data
- Demonstrate an understanding of complex algebra and related operations
- Demonstrate the ability to interpret and manipulate statistical information within their field of study

Usability and Relationship to other Modules
Mathematics for Engineers is a pathway specific module on the JUIC Industrial Engineering subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study an Industrial Engineering degree at Jacobs University.

Assessment
Type: Unseen examination
Duration/Length: 2.5 hours
Scope: Topics studied as covered by Learning Outcomes (i) to (v)
Weight: 100%

At least a 45% pass is required in this module for students to complete their chosen pathway successfully
## Module Name
**FINANCIAL ACCOUNTING**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<tbody>
<tr>
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## Module Components

<table>
<thead>
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<th>Number</th>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</table>

## Program Affiliation
- JUIC International Foundation Year
- Specific to the Business subject area

## Mandatory Status
Mandatory for progression to specified degrees via the Business subject area

## Entry Requirements

<table>
<thead>
<tr>
<th>Pre-requisites</th>
<th>Co-requisites</th>
<th>Knowledge, Abilities, or Skills</th>
<th>Frequency</th>
<th>Forms of Learning and Teaching</th>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
</table>
| High School Diploma | None | - A solid background in Mathematics  
- Basic IT skills | Up to twice an academic year | - Tutor-led but interactive classes (42 hours)  
- Directed and independent learning (83 hours) | 14 week semester | 125 hours |
| None | | | | | | |

## Recommendations for Preparation
Students are unlikely to have undertaken formal prior study of Financial Accounting, but will have studied Mathematics and IT, which will help them in the analytical work, calculations and presentation of data required in their study of Accounting. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

## Content and Educational Aims
This module aims to introduce students to the basic mechanics and processes of financial accounting in both theory and practice, including bookkeeping. It further helps students to understand the importance of financial accounting procedures and the resulting financial statements for running a business.

The module content includes:
- Accounting records and their importance to commercial operations in terms of monitoring a company’s performance and determining its sustainability
- Source materials and their use in preparing journals/day-books and ledger accounts
- Recording credit and cash transactions using the system of double-entry bookkeeping; checking accuracy and preparing a trial balance
- Calculation of some key ratios and using these to interpret a basic Statement of Financial Position and Income Statement
- Trading and profit and loss accounts, depreciation, stock inventories
## Intended Learning Outcomes

By the end of this module, students will be able to

- Demonstrate an understanding of basic theory, practice and terms of financial accounting
- Explain the uses and value of financial accounting to a business
- Use double-entry bookkeeping to record financial transactions of a company and prepare a trial balance
- Use key ratios to interpret Statement of Financial Position and Income Statement
- Demonstrate how specialist software supports the contemporary accounting function.

## Usability and Relationship to other Modules

Financial Accounting is a pathway specific module on the JUC Business subject area and with the other modules on this pathway provides an appropriate preparation for students wishing to study specified Business-related degrees at Jacobs University.

## Assessment

**Type:** Coursework essay on the importance of preparation of accurate accounts to a business  
**Duration/Length:** 1,000 words  
**Weight:** 30%  
**Scope:** Covers topics relevant to the achievement of Learning Outcomes (i), and (ii)

**Type:** Examination on process of preparing company accounts  
**Duration/Length:** 2 hours  
**Weight:** 70%  
**Scope:** Covers Learning Outcomes, (i), (iii), (iv) and (v)

At least a 45% pass is required in this module for students to complete their chosen subject area successfully.
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>FOUNDATION ECONOMICS</td>
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### Module Components

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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</tr>
</tbody>
</table>

### Program Affiliation
- JUIC International Foundation Year
- Specific to the Business, Industrial Engineering and Social Sciences study areas

### Mandatory Status
Mandatory for progression to specified degrees via the Business, Industrial Engineering and Social Sciences study areas

### Entry Requirements

**Pre-requisites**
- ☑ High School Diploma
- □ None

**Co-requisites**
- □
- ☑ None

**Knowledge, Abilities, or Skills**
- A solid background in Mathematics
- Ability to research, evaluate and express opinions

**Frequency**
- Up to twice an academic year

**Forms of Learning and Teaching**
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

**Duration**
- 14 week semester

**Workload**
- 125 hours

### Recommendations for Preparation
Students are unlikely to have undertaken formal prior study of Economics but will have engaged in other fields of study, which develop similar skills sets in uncovering and evaluating evidence and being able to synthesize material and use this synthesis to express an informed and balanced view. They will also have studied Mathematics, which will help them in the modelling and analytical work required in the study of Economics. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

### Content and Educational Aims
This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.

The content of the module includes:
- Basic concepts and terms in study of economic theory - demand and supply; the operation of price mechanism; elasticity, productivity, division of labour and economies of scale
- Underuse and full use of economic resources; scarcity, choice and allocation
- Internal organisation and management of business firms and their external behaviour in relations to the market
- Economics of transaction costs; the interests of stakeholders expressed through agency theory and demonstrated through elementary game theory; competitive advantage; strategy formation and strategic pricing
- Reasons for market failure; excess of demand or supply; equilibrium and disequilibrium; interrelationship between markets; misallocation of resources
- Public and private goods; merit and demerit goods; monopoly; reasons for, nature and impact of government intervention, generally and in relation to the banking crisis in 2008 and the pandemic in 2020
## Intended Learning Outcomes
By the end of this module, students will be able to
- Demonstrate an understanding of the key economic concepts and terminology
- Describe and explain the way in which firms organise themselves, develop their business strategy and relate to the market
- Demonstrate an understanding of the interplay of objectives and priorities between business stakeholders
- Explain the factors that determine the successful operation of a market economy and explain the reasons for market failure
- Explain the reasons for and consequences of government intervention in the market

## Usability and Relationship to other Modules
Foundation Economics is a pathway specific module on the JUC Industrial Engineering study area and with the other modules in this study area provides an appropriate preparation for students wishing to study the Industrial Engineering and Management degree at Jacobs University.

## Assessment
Type: Case study/simulation illustrating the priorities and interactions between stakeholders and management in a business firm
Duration/Length: 1000 words

Weight: 40%
Scope: Covers topics relevant to the achievement of Learning Outcomes (ii), and (iii)

Type: Unseen examination – basic economics terminology and theories
Duration/length: 2 hours
Weight 60%
Scope: Covers Learning Outcomes, (i), (iv) and (v)

At least a 45% pass is required in this module for students to complete their chosen study area successfully
Subject area Natural Sciences

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>FOUNDATION BIOLOGY</td>
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<td>FOUNDATION (SUBJECT AREA SPECIFIC)</td>
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<table>
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<td><strong>Number</strong></td>
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<table>
<thead>
<tr>
<th>Module Coordinator</th>
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<tbody>
<tr>
<td><strong>JUIC College Director</strong></td>
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<tr>
<td><strong>Program Affiliation</strong></td>
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<tr>
<td>▪ JUIC International Foundation Year</td>
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<tr>
<td>▪ Specific to the Natural Sciences subject area</td>
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<tr>
<td><strong>Mandatory Status</strong></td>
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<tr>
<td>Mandatory for progression to specified degrees via the Natural Sciences subject area</td>
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<table>
<thead>
<tr>
<th>Entry Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-requisites</strong></td>
</tr>
<tr>
<td>□ High School Diploma</td>
</tr>
<tr>
<td>□ None</td>
</tr>
<tr>
<td><strong>Co-requisites</strong></td>
</tr>
<tr>
<td>□ None</td>
</tr>
<tr>
<td><strong>Knowledge, Abilities, or Skills</strong></td>
</tr>
<tr>
<td>▪ A basic theoretical understanding of Science gained during prior studies</td>
</tr>
<tr>
<td>▪ Practical and lab skills awareness</td>
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</table>

<table>
<thead>
<tr>
<th>Frequency</th>
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<tbody>
<tr>
<td>Up to twice an academic year</td>
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</table>

<table>
<thead>
<tr>
<th>Forms of Learning and Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Tutor-led but interactive classes (30 hours)</td>
</tr>
<tr>
<td>▪ Practical sessions (12 hours)</td>
</tr>
<tr>
<td>▪ Directed and independent learning (83 hours)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration</th>
<th>Workload</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 week term</td>
<td>125 hours</td>
</tr>
</tbody>
</table>

Recommendations for Preparation

Students require basic background in the Sciences through their studies in high school or elsewhere. This may be purely theoretical in some cases but a knowledge of the laboratory environment would be very helpful. Preparation prior to arrival would include a reading list to help introduce the topics to be studied during the term and refresh the students’ knowledge of the subject. On arrival students receive training on laboratory procedures and etiquette with a strong focus of working safely in the laboratory both for the student’s own sake and in the interests of others in the class.

Content and Educational Aims

This module builds on prior study of the sciences at high school and provides the appropriate foundation in knowledge of Biology and Biochemistry plus related practical skills to enable students to be successful in their undergraduate studies in the fields of Biomedical Science or other Biology-related degree Programs. In particular it revises high school material, strengthens understanding of fundamental principles and provides students with an understanding of cell structure and function, of how information flows through a cell and the basic principles of metabolism Students are also provided with an introduction to the organisation and integration of physiological processes in nature but with a particular reference to animals and with an emphasis on mammalian, especially human physiology. Students consider a number of physiological processes including the cardiovascular, respiratory and digestive systems. Students also develop their practical skills and become accustomed to working safely in the laboratory environment.

In summary, the module includes:

- The properties of biological molecules
- Cellular structure and function
- The structure of chromosomes
- Cell division
- Movement through cell membranes
- Enzymes
- Metabolic pathways
- Organisation of the human circulatory system
- The respiratory system; lung structure; chemical regulation of respiration
- The digestive system, urine formation and elimination of nitrogenous waste
- Practical sessions to support the study of theory

**Intended Learning Outcomes**

By the end of this module, students will be able to

- Describe cell structure and division and explain its significance
- Describe the properties of some important molecules and their roles
- Outline the main metabolic pathways and describe in more detail those of carbohydrate metabolism
- Describe the structure and function of the circulatory system, and explain how it influences the organisation of other major physiological systems
- Describe in detail the structure and functions of the human cardiovascular, respiratory and osmo-regulatory systems
- Describe the digestive processing of the major nutrients and outline nutrient metabolism in mammals
- Carry out simple laboratory operations with an awareness of the importance of rules governing safety

**Usability and Relationship to other Modules**

Foundation Biology is a pathway specific module on the JUCI Natural Sciences subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study specified Health and Life Sciences degrees at Jacobs University. At least a 45% pass is required in this module for students to complete the subject area successfully

**Assessment**

Type: Unseen examination  
Duration/Length: 2 hours  
Scope: Theory studied as covered by Learning Outcomes (i) to (vi)  
Weight: 70%

Type: Laboratory Reports  
Scope: Demonstrates achievement of Learning Outcome (vii)  
Length (for guidance) 500 words  
Weight: 30%

At least a 45% pass is required in this module for students to complete the pathway successfully
# Module Name
**PURE MATHEMATICS**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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<tbody>
<tr>
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## Module Components

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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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## Program Affiliation
- JUIC International Foundation Year
- Specific to the Natural Sciences subject area

## Module Coordinator
**JUIC College Director**

## Mandatory Status
Mandatory for progression to specified degrees via the Natural Sciences subject area

## Entry Requirements
- **Pre-requisites**
  - ☑ High School Diploma
  - ☐ None

- **Co-requisites**
  - ☑ None

- **Knowledge, Abilities, or Skills**
  - A basic theoretical understanding of Mathematics
  - Practical skills in the presentation and application of data

## Frequency
- Up to twice an academic year

## Forms of Learning and Teaching
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

## Duration
- 14 week semester

## Workload
- 125 hours

## Recommendations for Preparation
Students require strong background in Mathematics through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the term and refresh the students' knowledge of the background to the Mathematics found in the module.

## Content and Educational Aims
This module builds on prior studies of Mathematics at high school and prepares students for the work that they will do later on in their Natural Science degree. This module revises high school material, strengthens understanding of fundamental principles and prepares students to use mathematical language appropriately and understand mathematical notation, conventions and units. They learn how a knowledge of Mathematics significantly underpins all the work they will carry out in their scientific studies.

The content of the module includes:
- Experimental Laws: Linear and non-linear relations.
Intended Learning Outcomes
By the end of this module, students will be able to
- Demonstrate an understanding of mathematical terminology, notation, conventions and units
- Demonstrate an ability to interpret in mathematical terms verbal, graphical and tabular information
- Manipulate mathematical expressions
- Apply mathematical methods and techniques to problem solving at a basic level
- Make inferences from their interpretation of mathematical information
- Demonstrate an understanding of data gathering and interpretation in research in the Natural Sciences

Usability and Relationship to other Modules
Pure Mathematics is a pathway specific module on the JUIC Natural Sciences subject area and with the other modules on this pathway provides an appropriate preparation for students wishing to study specified Science-based degrees at Jacobs University. At least a 45% pass is required in this module for students to complete their chosen subject area successfully

Assessment
Type: Unseen examination
Duration/Length: 2.5 hours
Scope: Topics studied as covered by Learning Outcomes (i) to (vi)
Weight: 100%

At least a 45% pass is required in this module for students to complete the pathway successfully
<table>
<thead>
<tr>
<th>Module Name</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUNDATION CHEMISTRY</td>
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</table>

**Module Components**

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Type</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td></td>
</tr>
<tr>
<td>tbc</td>
<td>Laboratory sessions (2 hours each)</td>
<td>Practical</td>
<td></td>
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</table>

**Module Coordinator**

<table>
<thead>
<tr>
<th>College</th>
<th>Director</th>
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<tbody>
<tr>
<td>JUIC</td>
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</tbody>
</table>

**Program Affiliation**

- JUIC International Foundation Year
- Specific to the Natural Sciences subject area

**Mandatory Status**

Mandatory for progression to specified degrees via the Natural Sciences subject area

**Entry Requirements**

**Pre-requisites**

- High School Diploma
- None

**Co-requisites**

- Knowledge, Abilities, or Skills
  - A basic theoretical understanding of Science gained during prior studies
  - Practical and lab skills awareness

**Frequency**

- Up to twice an academic year

**Forms of Learning and Teaching**

- Tutor-led but interactive classes (30 hours)
- Practical sessions (12 hours)
- Directed and independent learning (83 hours)

**Duration**

- 14 week semester

**Workload**

- 125 hours

**Recommendations for Preparation**

Students require basic background in Chemistry through their studies in high school or elsewhere. This may be purely theoretical in some cases but a knowledge of the laboratory environment would be very helpful. Preparation prior to arrival would include a reading list to help introduce the topics to be studied during the term and to refresh the students’ knowledge of Chemistry as a specific subject area. On arrival, students receive training on laboratory procedures and etiquette with a strong focus of working safely in the laboratory both for the student’s own sake and in the interests of others in the class.

**Content and Educational Aims**

This module builds on prior study of the Chemistry at high school and provides the appropriate foundation in knowledge of Chemistry plus related practical skills to enable students to be successful in their undergraduate studies in the fields of Biomedical Science or other Science-related degree Programs. In particular it aims to provide students with an introduction to post-High School studies in Chemistry and to provide a stimulating learning environment in which to pass on knowledge and understanding of the basic and more advanced theoretical principles of the subject. There is an emphasis throughout the module on Organic Chemistry and on its impact through practical applications on society. Students also develop their practical skills and become accustomed to working safely in the laboratory environment.

The main topics covered are:

- Periodic Table: Periodicity; the Periodic Table of Elements; structure, groupings of elements; periodic trends and patterns
- Introduction to redox: Oxidation number, redox reactions, oxidising and reducing agents. Ionic half equations and full equations for redox processes. Titrimetry involving the use of potassium manganite (VII) and iodine/thiosulphate.
- Applications: Some real-life, practical applications of organic chemistry. Chemistry in relation to other subject areas. Importance of Chemistry within society.

Practical sessions support the study of theory.

<table>
<thead>
<tr>
<th>Intended Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>By the end of this module, students will be able to</td>
</tr>
<tr>
<td>- Demonstrate an understanding of the notion of periodicity and of the structure of the Periodic Table</td>
</tr>
<tr>
<td>- Demonstrate an understanding of the basis of atomic and molecular structure and of chemical bonding</td>
</tr>
<tr>
<td>- Explain the differences in properties between ions and molecules</td>
</tr>
<tr>
<td>- Use the mole concept and balance chemical equations</td>
</tr>
<tr>
<td>- Demonstrate an understanding of the basic principles of chemical energy</td>
</tr>
<tr>
<td>- Describe the principles of redox reactions</td>
</tr>
<tr>
<td>- Explain how chemical reactions work and describe the main factors which affect them, with particular reference to equilibria including acid-base equilibria</td>
</tr>
<tr>
<td>- Show an initial understanding of important organic molecules</td>
</tr>
<tr>
<td>- Relate Chemistry to other areas of study and explain its importance in everyday life</td>
</tr>
<tr>
<td>- Carry out simple laboratory operations of mass and volume measurement, titrations etc with an awareness of the importance of good laboratory practice and safety requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usability and Relationship to other Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Chemistry is a pathway specific module on the JUIC Natural Sciences subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study specified Health and Life Sciences degrees at Jacobs University.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment</th>
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<tbody>
<tr>
<td>Type: Unseen examination</td>
</tr>
<tr>
<td>Duration/Length: 2 hours</td>
</tr>
<tr>
<td>Scope: Theory studied as covered by Learning Outcomes (i) to (ix)</td>
</tr>
<tr>
<td>Weight: 70%</td>
</tr>
<tr>
<td>Type: Laboratory Reports</td>
</tr>
<tr>
<td>Scope: Demonstrates achievement of Learning Outcome (x)— Length (for guidance) 500 words</td>
</tr>
<tr>
<td>Weight: 30%</td>
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</table>

At least a 45% pass is required in this module for students to complete the pathway successfully.
# FUNDAMENTALS OF THE PHYSICAL SCIENCES

**Module Code**
To be confirmed

**Level (type)**
FOUNDATION
(SUBJECT SPECIFIC)

**ECTS**
5

## Module Components

<table>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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<tr>
<td>tbc</td>
<td>Laboratory sessions (2 hours each)</td>
<td>Practical</td>
<td></td>
</tr>
</tbody>
</table>

## Module Coordinator
**JUIC College Director**

## Program Affiliation
- JUIC International Foundation Year
- Specific to the Natural Sciences subject area

## Mandatory Status
Mandatory for progression to specified degrees via the Natural Sciences subject area

## Entry Requirements
**Pre-requisites**
- ☐ High School Diploma
- ☐ None

**Co-requisites**
- ☐ None

**Knowledge, Abilities, or Skills**
- A basic theoretical understanding of Mathematics and the Physical Sciences gained during prior studies
- Practical and lab skills awareness

**Frequency**
Up to twice an academic year

**Forms of Learning and Teaching**
- Tutor-led but interactive classes (30 hours)
- Practical sessions (12 hours)
- Directed and independent learning (83 hours)

**Duration**
14 week semester

**Workload**
125 hours

## Recommendations for Preparation
Students require a basic background in Mathematics and the Physical Sciences through their studies in high school or elsewhere. This may be purely theoretical in some cases but a knowledge of the laboratory environment would be very helpful. Preparation prior to arrival would include a reading list to help introduce the topics to be studied during the term and refresh the students’ knowledge of the subject. On arrival students receive training on laboratory procedures and etiquette with a strong focus of working safely in the laboratory both for the student’s own sake and in the interests of others in the class.

## Content and Educational Aims
This module builds on prior study of the Physical Sciences, normally Physics, at high school and provides the appropriate foundation in scientific knowledge plus related practical skills to enable students to be successful in their undergraduate studies in their Natural Science degree Program. In particular it provides students with an understanding of materials, solids and fluids, heat and gases and the structure of the atom. In addition, students are introduced to a basic knowledge of earth sciences, geology, meteorology and oceanography. Students also develop their practical skills and become accustomed to working safely in the laboratory environment.

In summary, this module covers the following:

**Matter**
- Materials – Strength of solids; Elastic behaviour; Structure of solids; Fluids; Non-viscous flow; Viscous flow; Surfaces
- Heat and Gases – Temperature; Heat capacities; Thermal coefficient; Thermal conduction; Thermal radiation; Ideal gases; Thermodynamics of ideal gases; Real gases; Vapours; Entropy and equilibrium
- Structure of the atom – Properties of the electron; Free electrons in metals; Electrons within atoms; Energy emitted by electrons; Properties of the nucleus; Radioactivity, Fission and Fusion
### Geology
- Study of rock types and the rock cycle; un lithified material such as magma and lava
- Earth structure; tectonic plates
- Basic geological field methods

### Meteorology and Oceanography
- Atmospheric composition, contemporary forecasting of weather and trends
- Ocean currents and waves, ecosystem dynamics

Practical work in support of the above.

### Intended Learning Outcomes
By the end of this module, students will be able to:
- Demonstrate an understanding of the properties of matter – solids, fluids and gases
- Describe the structure of the atom and relate to the peaceful practical uses of nuclear technology
- Demonstrate an understanding of the rock types and how these were formed
- Explain the composition of the atmosphere
- Demonstrate an understanding of ocean currents and wave formation
- Carry out practical experiments appropriately in a laboratory environment or through field work

### Usability and Relationship to other Modules
Fundamentals of the Physical Sciences is a pathway specific module on the JUIC Natural Sciences subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study specified Natural Science degrees at Jacobs University.

### Assessment
**Type:** Unseen examination  
**Duration/Length:** 2 hours  
**Scope:** Theory studied as covered by Learning Outcomes (i) to (v)  
**Weight:** 70%

**Type:** Reports on Laboratory-based or Field Work  
**Scope:** Demonstrates achievement of Learning Outcome (vi) – Length (for guidance) 500 words  
**Weight:** 30%

At least a 45% pass is required in this module for students to complete the pathway successfully.
Subject area Social Sciences

<table>
<thead>
<tr>
<th>Module Name</th>
<th>Introduction to the Social Sciences</th>
<th>Module Code</th>
<th>Level (type)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>FOCUS (SUBJECT AREA SPECIFIC)</td>
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<table>
<thead>
<tr>
<th>Module Components</th>
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<tbody>
<tr>
<td>Number</td>
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<tr>
<td>--------</td>
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<tr>
<td>tbc</td>
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</table>

<table>
<thead>
<tr>
<th>Mandatory Status</th>
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</thead>
<tbody>
<tr>
<td>Mandatory for progression to specified degrees via the Social Sciences subject area</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Entry Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-requisites</td>
</tr>
<tr>
<td>High School Diploma</td>
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<tr>
<td>None</td>
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</table>

<table>
<thead>
<tr>
<th>Co-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge, Abilities, or Skills</td>
</tr>
<tr>
<td>An interest in individuals and roles within society</td>
</tr>
<tr>
<td>Ability to research, evaluate and express opinions</td>
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</table>

<table>
<thead>
<tr>
<th>Frequency</th>
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<tbody>
<tr>
<td>Up to twice an academic year</td>
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<table>
<thead>
<tr>
<th>Forms of Learning and Teaching</th>
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<table>
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<th>Duration</th>
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<tbody>
<tr>
<td>14 week semester</td>
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<table>
<thead>
<tr>
<th>Workload</th>
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<tbody>
<tr>
<td>125 hours</td>
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</tbody>
</table>

Recommendations for Preparation
To help students gain a clearer understanding of the Social Sciences as a subject area, students should learn about current events by reading a variety of news sources and familiarize themselves with the work of some of the classical thinkers, such as Niccolò Machiavelli or Max Weber.

Content and Educational Aims
This module introduces students to the study of contemporary human societies, and the way in which social institutions, social groups, and individuals respond to core social challenges like cooperation and conflict. Students learn how key subjects of Social Sciences, like Communication Science and Media Studies, Political Science (including international relations) and Sociology approach these challenges and tackle them. The module kicks off with a brief overview of historical thinkers and their key ideas and ends at current studies on contemporary globalized societies. Major theoretical concepts are explained by drawing on current concrete problems like unemployment, poverty and wealth, migration or international conflict. This problem-oriented approach aids students’ understanding of how to contend with the challenges of highly diverse societies and allows them to successfully continue with their undergraduate social science studies.

The content of the module includes:
- What are the Social Sciences? The main features that link them together as overlapping subjects within a wider whole
- Brief review of main thinkers and key concepts
- Overview of contemporary social problems, ranging from the individual to the level of international actors
- Family sociology and gender difference Race, religion, diversity, identity and tolerance
- Social media and democracy
- Political conflict and conflict resolution
- International cooperation and International Organizations
Intended Learning Outcomes
By the end of this module, students will be able to
Demonstrate an understanding of what constitutes a Social Science
Demonstrate knowledge in general terms of the key figures, theories and concepts of the Social Sciences
Evaluate key sociological and political science studies
Analyse social behaviour within different actor constellations and social groups
Examine an issue around portrayal of contemporary society in the media
Demonstrate an ability to conduct basic research within the subject area and report your findings

Usability and Relationship to other Modules
Introduction to the Social Sciences is a pathway specific module on the JUIC Social Sciences subject area and
with the other modules in this subject area provides an appropriate preparation for students wishing to study
specified Social Science degrees at Jacobs University.

Assessment
Type: Interim Test
Duration/Length: 1 hour
Weight 30%
Scope: Covers topics relevant to the achievement of Learning Outcomes (i), (ii) and (iii)

Type: Group Coursework Task to research an issue within contemporary society and report findings
Duration/Length: 1500 words
Weight 70%
Scope: Covers Learning Outcomes, (iv), (v) and (vi)

At least a 45% pass is required in this module for students to complete their chosen subject area successfully
# Module Name
**STATISTICS FOR BUSINESS AND THE SOCIAL SCIENCES**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Level (type) FOCUS (SUBJECT AREA SPECIFIC)</th>
<th>ECTS</th>
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</thead>
<tbody>
<tr>
<td>To be confirmed</td>
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## Module Components

<table>
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</thead>
<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
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</tbody>
</table>

## Module Coordinator
**JUIC College Director**

- **Program Affiliation**
  - JUIC International Foundation Year
  - Specific to the Business and Social Sciences subject areas

- **Mandatory Status**
  - Mandatory for progression to specified degrees via the Business and Social Sciences subject areas

## Entry Requirements
- **Pre-requisites**
  - High School Diploma
  - None

- **Co-requisites**
  - None

- **Knowledge, Abilities, or Skills**
  - A basic theoretical understanding of Mathematics
  - Practical skills in the presentation and application of mathematical data

- **Frequency**
  - Up to twice an academic year

- **Forms of Learning and Teaching**
  - Tutor-led but interactive classes (42 hours)
  - Directed and independent learning (83 hours)

- **Duration**
  - 14 week semester

- **Workload**
  - 125 hours

## Recommendations for Preparation
Students require a strong background in Mathematics through their studies in high school or elsewhere. Preparation prior to arrival would include a reading list to help prepare them for the topics to be studied during the semester and refresh the students’ knowledge of the mathematical aspects of the module. This material will also introduce them to elements of the module, such as the study of Statistics, which may not be familiar to all students.

## Content and Educational Aims
This module builds on prior studies of Mathematics at high school and equips students with technical tools and skills that they will need for their later degrees in Business or other Social Sciences. The module covers mathematical calculation, statistical methods, as well as presentation and interpretation skills of statistical data. Moreover, it supports students to develop critical skills in assessing the reliability of data that is presented to them. The math on this module is related specifically to business and other social science context, examples used in teaching are drawn from real life scenarios that arise in these fields.

The content of the module includes:
- Numbers, decimals, averages, percentages, ratios, fractions, approximations
- Formulae – for calculating areas, circumferences, statistical formulae
- Writing proofs for simple mathematical statements
- Statistical measures – mean, mode, median, quartiles, interquartile ranges
- Understanding, critiquing and using sampling methods
- Understanding and testing for differences
- Evaluating strengths, weaknesses and suitability of data
- Interpreting, analysing and comparing distributions in data sets
- Understanding regression
- Algebra
- Simultaneous and quadratic equations
- Diagrammatic representations: charts, graphs, frequency diagrams, using computer packages
- Money management: wages and tax, budgets, rent, utility bills, national contributions, calculation of interest, savings and investments, exchange rates

**Intended Learning Outcomes**

By the end of this module, students will be able to

- Demonstrate knowledge and understanding of fundamental mathematical terminology and calculations
- Demonstrate the ability to understand and solve mathematical problems using appropriate techniques both mentally and with a calculator
- Demonstrate understanding of a range of statistical techniques and their application to a range of real life and study of Business or the Social Sciences as well as their limitations
- Use statistical problem-solving techniques to prepare, analyse and interpret data in the context of a case study drawn from a Business or Social Sciences context

**Usability and Relationship to other Modules**

Mathematics for Business and the Social Sciences is a pathway specific module on the JUIC Business and Social Sciences subject areas and with the other modules in these subject areas provides an appropriate preparation for students wishing to study specified Business or Social Sciences degrees at Jacobs University.

**Assessment**

Type: Unseen examination  
Duration/Length: 2 hours  
Scope: Theory studied as covered by Learning Outcomes (i) to (iii)  
Weight: 60%

Type: Case study providing opportunity to demonstrate gathering, analysis and presentation of statistical information relevant to future studies in Business and/or the Social Sciences  
Scope: Demonstrates achievement of Learning Outcome (iv) – Length (for guidance) 1000 words  
Weight: 40%

At least a 45% pass is required in this module for students to complete their chosen subject area successfully.
### Module Name
**FOUNDATION ECONOMICS**

<table>
<thead>
<tr>
<th>Module Code</th>
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<tbody>
<tr>
<td>To be confirmed</td>
<td>FOUNDATION (SUBJECT AREA SPECIFIC)</td>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
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</tbody>
</table>

### Module Coordinator
**JUIC College Director**

### Program Affiliation
- JUIC International Foundation Year
- Specific to the Business, Industrial Engineering and Social Sciences subject areas

### Mandatory Status
Mandatory for progression to specified degrees via the Business, Industrial Engineering and Social Sciences subject areas

### Entry Requirements

#### Pre-requisites
- ☑ High School Diploma
- ☐ None

#### Co-requisites
- ☐ None

#### Knowledge, Abilities, or Skills
- A solid background in Mathematics
- Ability to research, evaluate and express opinions

### Frequency
- Up to twice an academic year

### Forms of Learning and Teaching
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (83 hours)

#### Duration
- 14 week semester

### Workload
- 125 hours

### Recommendations for Preparation
Students are unlikely to have undertaken formal prior study of Economics but will have engaged in other fields of study, which develop similar skills sets in uncovering and evaluating evidence and being able to synthesize material and use this synthesis to express an informed and balanced view. They will also have studied Mathematics, which will help them in the modelling and analytical work required in the study of Economics. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

### Content and Educational Aims
This module introduces students to political economy, macroeconomics and microeconomics, and their differences. The course considers economic aspects of production, distribution and consumption of goods and services, introduces the idea of markets as places for economic transactions, including supply and demand, and explains the role of money in a society. The course aims to provide students with the appropriate foundation in economic theory and economic history, and to enable them to be successful in their later related undergraduate studies in the fields of Business, Industrial Engineering or Social Sciences.

The content of the module includes:
- Basic concepts and terms in study of economic theory - demand and supply; the operation of price mechanism; elasticity. productivity, division of labour and economies of scale
- Underuse and full use of economic resources; scarcity, choice and allocation
- Internal organisation and management of business firms and their external behaviour in relations to the market
- Economics of transaction costs; the interests of stakeholders expressed through agency theory and demonstrated through elementary game theory; competitive advantage; strategy formation and strategic pricing
- Reasons for market failure; excess of demand or supply; equilibrium and disequilibrium; interrelationship between markets; misallocation of resources
**Intended Learning Outcomes**
By the end of this module, students will be able to
- Demonstrate an understanding of the key economic concepts and terminology
- Describe and explain the way in which firms organise themselves, develop their business strategy and relate to the market
- Demonstrate an understanding of the interplay of objectives and priorities between business stakeholders
- Explain the factors that determine the successful operation of a market economy and explain the reasons for market failure
- Explain the reasons for and consequences of government intervention in the market

**Usability and Relationship to other Modules**
Foundation Economics is a pathway specific module on the JUIC Social Sciences subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study specified Social Sciences degrees at Jacobs University.

**Assessment**
Type: Case study/simulation illustrating the priorities and interactions between stakeholders and management in a business firm
Duration/Length: 1000 words
Weight 40%
Scope: Covers topics relevant to the achievement of Learning Outcomes (ii), and (iii)

Type: Unseen examination – basic economics terminology and theories
Duration/Length: 2 hours
Weight 60%
Scope: Covers Learning Outcomes, (i), (iv) and (v)

At least a 45% pass is required in this module for students to complete their chosen subject area successfully.
## Module Components

<table>
<thead>
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<tbody>
<tr>
<td>tbc</td>
<td>Seminar style classes</td>
<td>Tutor-led</td>
<td>5</td>
</tr>
</tbody>
</table>

### Program Affiliation
- JUIC International Foundation Year
- Specific to the Social Sciences subject area

### Mandatory Status
- Mandatory for progression to specified degrees via the Social Sciences subject area

### Entry Requirements
- **Pre-requisites**
  - High School Diploma
  - None
- **Co-requisites**
  - None

### Knowledge, Abilities, or Skills
- A solid background in Mathematics
- Ability to research, evaluate and express opinions

### Frequency
- Up to twice an academic year

### Forms of Learning and Teaching
- Tutor-led but interactive classes (42 hours)
- Directed and independent learning (60 hours)

### Duration
- 14 week semester

### Workload
- 125 hours

### Recommendations for Preparation

Students are unlikely to have undertaken formal prior study of Psychology but will have engaged in studies at high school in the humanities or sciences which develop similar skills sets in deploying a scientific methodology, basic research skills in sourcing and evaluating evidence and being able to synthesize material and use it to express a tenable view. They will also have studied Mathematics, which will help them in the analytical work required in the study of Psychology. To help students gain a basic understanding of the subject area material prior to arrival would include a reading list to help prepare them for the topics to be studied during the module. Early sessions during the delivery of the module will focus on a basic introduction to the subject area.

### Content and Educational Aims

This module introduces students to the main theoretical approaches in Psychology and considers its historical development as a field of study. Students are made aware of key ideas and concepts. The areas on which this module focuses are Social, Cognitive, Developmental and Biological Psychology. Research methods and related ethical considerations are introduced.

Summary of module content:

Students are introduced to the historical development of the study of Psychology and become familiar with a range of approaches, cognitive, behavioural, neurological and evolutionary.

Four particular areas are then studied. Within social psychology the main focus is on anti-social behaviour, especially aggression. The main social-psychological theories of aggression are taught, for example, social learning theory and relative deprivation, and consideration is given to the effect of environmental stressors on aggressive behaviour, for example, noise, temperature and crowding. Media influences on behaviour are also covered.

In considering Cognitive Psychology the focus is on human memory and the nature and structure of memory, including capacity, duration and encoding in short- and long-term memory are covered.
Three models of memory are considered – the multi-store model, the working memory model and levels of processing. The topic area concludes in considering reconstructive memory and work on relation to eye witness testimony.

Developmental Psychology covers the developmental theories of Piaget and Vygotsky, including the key stages of each, their key developmental concepts and an evaluation of how each may be applied to education.

In Neuropsychology students learn about the anatomy of the brain, the role of the neuron, the development of consciousness and face and language processing.

Students consider methods commonly used in undertaking research in Psychology and the ethical questions these raise.

<table>
<thead>
<tr>
<th>Intended Learning Outcomes</th>
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<tbody>
<tr>
<td>By the end of this module, students will be able to</td>
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<tr>
<td>- Demonstrate their knowledge of the main theoretical approaches to the study of Psychology and of the subject’s development over time</td>
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<tr>
<td>- Demonstrate an awareness of the specialised language, terminology and concepts of the subject.</td>
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<tr>
<td>- Analyse and evaluate psychological theories relevant to the specific areas studied, Social, Cognitive, Developmental Psychology and Neuropsychology.</td>
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<tr>
<td>- Explain how a study of Psychology can be applied to the resolution of problems for individuals or society, for example, determination of factors leading to anti-social behaviour or causing difficulties with learning</td>
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<tr>
<td>- Describe commonly applied research methods and review ethical issues raised by them</td>
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<tr>
<th>Usability and Relationship to other Modules</th>
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<tbody>
<tr>
<td>Introduction to Psychology is a pathway specific module on the JUIC Social Sciences subject area and with the other modules in this subject area provides an appropriate preparation for students wishing to study specified Social Sciences degrees at Jacobs University.</td>
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<tr>
<th>Assessment</th>
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<tbody>
<tr>
<td>Type: Coursework essay</td>
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<tr>
<td>Duration/Length: 1000 words</td>
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<tr>
<td>Weight 40%</td>
</tr>
<tr>
<td>Scope: Covers topics relevant to the achievement of Learning Outcomes (i), (ii) and (iv)</td>
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<tr>
<th>Type: Unseen examination</th>
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<tbody>
<tr>
<td>Duration/Length: 2 hours</td>
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<tr>
<td>Weight 60%</td>
</tr>
<tr>
<td>Scope: Covers Learning Outcomes, (i), (ii), (iii) and (v)</td>
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At least a 45% pass is required in this module for students to complete their chosen subject area successfully.