



Course name:	10246NAT Certificate IV in University Preparation																													
Program:	STEM HIGH ACHIEVERS																													
Description of the Program:	<p>The Stem High Achievers program guarantees entry into most undergraduate courses at The University of Queensland to all students who meet the specific standards for their chosen program (quotas apply in some programs). These standards include meeting minimum grades as well as all competency requirements for the 10246NAT Certificate IV in University Preparation.</p> <p>Subjects comprise of regular formal class time as well as more casual tutorial sessions, replicating the teaching style at university.</p>																													
Entry Requirements:	<p>Program placement is determined after consideration of a student's academic background, English proficiency and desired undergraduate program.</p> <p>Refer to Entry requirements on the IES College Brochure for more information.</p> <p>Students who are Australian citizens or who hold current Australian Permanent Residency status are not able to be admitted to the program.</p>																													
Duration:	This program is only offered in an 18 week accelerated mode and has a September start date with entry into University of Queensland undergraduate programs in February of the following year.																													
	Course Start Date:	Monday, 16 September 2019	Course End Date: Friday, 24 January 2020																											
Course Structure:	<p>Students study the following compulsory units:</p> <ul style="list-style-type: none"> ➤ Academic English for University Studies (AE) <ul style="list-style-type: none"> ○ UPRENG401 Employ English language skills commensurate with academic purpose ○ BSBCMM401 Make a presentation ○ CUARES402 Conduct research ➤ Mathematics <ul style="list-style-type: none"> ○ UPRMTH401 Apply mathematical concepts to solve problems <p>Students study three elective subjects from the following five options. The units studied for each of these subjects are provided below.</p> <ul style="list-style-type: none"> ➤ Behavioural Science <ul style="list-style-type: none"> ○ UPRBEH401 Examine behavioural science theory and associated behaviour. ➤ Biology <ul style="list-style-type: none"> ○ UPRBIO401 Investigate biological science problems ➤ Chemistry <ul style="list-style-type: none"> ○ UPRCHE401 Investigate chemical science problems ➤ Information Technology <ul style="list-style-type: none"> ○ UPRICT401 Apply computer technology concepts and methods to execute digital media experiments ○ UPRICT402 Apply programming concepts to control objects in a simulated environment ○ ICTWEB429 Create a markup language document to specification ○ BSBITA411 Design and develop relational databases ➤ Physics <ul style="list-style-type: none"> ○ UPRPHY401 Investigate physics problems <p>There are eight possible STEM Subject Selection options:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">Option 1</td> <td style="width: 33%; text-align: center;">Option 2</td> <td style="width: 33%; text-align: center;">Option 3</td> </tr> <tr> <td>Academic English Mathematics</td> <td>Academic English Mathematics</td> <td>Academic English Mathematics</td> </tr> <tr> <td>Physics Chemistry Information Technology</td> <td>Physics Biology Information Technology</td> <td>Behavioural Science Biology Information Technology</td> </tr> <tr> <td style="text-align: center;">Option 4</td> <td style="text-align: center;">Option 5</td> <td style="text-align: center;">Option 6</td> </tr> <tr> <td>Academic English Mathematics</td> <td>Academic English Mathematics</td> <td>Academic English Mathematics</td> </tr> <tr> <td>Physics Chemistry Biology</td> <td>Physics Biology Behavioural Science</td> <td>Behavioural Science Biology Chemistry</td> </tr> <tr> <td style="text-align: center;">Option 7</td> <td style="text-align: center;">Option 8</td> <td></td> </tr> <tr> <td>Academic English Mathematics</td> <td>Academic English Mathematics</td> <td></td> </tr> <tr> <td>Physics Chemistry Behavioural Science</td> <td>Behavioural Science Chemistry Information Technology</td> <td></td> </tr> </table>			Option 1	Option 2	Option 3	Academic English Mathematics	Academic English Mathematics	Academic English Mathematics	Physics Chemistry Information Technology	Physics Biology Information Technology	Behavioural Science Biology Information Technology	Option 4	Option 5	Option 6	Academic English Mathematics	Academic English Mathematics	Academic English Mathematics	Physics Chemistry Biology	Physics Biology Behavioural Science	Behavioural Science Biology Chemistry	Option 7	Option 8		Academic English Mathematics	Academic English Mathematics		Physics Chemistry Behavioural Science	Behavioural Science Chemistry Information Technology	
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Subject:	Academic English for University Studies (AE)
Subject Outline:	<p>This subject is designed to introduce international students to Australian culture and current issues, to develop students' academic study skills and their ability to use facilities required to research information in completing academic assignments. In addition, students develop English language skills needed in an academic environment.</p> <p>The course is delivered through the latest educational methodology: English language immersion and blended learning. Students will develop their English language capabilities through intensive immersion in Science subjects where English skills specific for academic success are developed alongside subject specific skills. In addition to English immersion, STEM students will engage in individualised, structured, and monitored academic English instruction including Moodle and face-to-face tuition. Moodle is an online platform that enables students to complete set work at their own speed and in their own time by staging learning in a way that promotes growth, engagement and momentum. This is supplemented by weekly two hour Academic English classes staffed by professional educators who provide students with individualised attention and feedback.</p> <p>Requirements for the three units of competency used in this subject will be met through an integrated approach to assessment based on evidence obtained from the elective subject studied by the students as well as a final exam.</p> <p>For more detailed information on subject delivery refer to the work program.</p>
Objectives:	<p>Upon completion, a competent student will be able to;</p> <ol style="list-style-type: none"> 1. Speak and write effectively using English relevant to academic purpose; 2. Present major assignments in accordance with academic language and format requirements; 3. Interpret instructions and collect information for identified academic purposes; 4. Clarify research briefs before conducting, analysing and presenting research findings; 5. Produce a team-driven investigative plan and contribute to group discussion on contemporary issues in Australian society; 6. Prepare, deliver and review a presentation which reports on an Australian social issue; 7. Undertake and monitor a personal academic study regime.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> • UPRENG401 Employ English language skills commensurate with academic purpose • BSBCMM401 Make a presentation • CUARES402 Conduct research

Students are assessed through the following assessment activities:

Assessment Activity	Description	Weighting
Work Place Health and Safety (WHS)	Students are required to undertake a Work Place Health and Safety module on Moodle and take notes on the organisation's WHS information and policies.	0%
Research Essay	Students must draft and write an individual, opinion-based research essay in accepted academic format based on research from a range of sources. This item will be assessed through the Chemistry Research Essay and/or Biology Research Essay.	15%
Seminar	In small groups, students must prepare, deliver and review a presentation by researching a contemporary issue, presenting content-based material, and fostering further discussion within the audience group. This item will be assessed through the Chemistry Seminar and/or Biology Seminar.	10%
Research Report	Students are required to write a research report in accepted academic format based on research from a range of sources which tests a hypothesis of the student's choice. This item will be assessed through the Physics Research Report and/or Behavioural Science Research Report.	25%
Study Plan	<p>Part 1 After each assessment item has concluded, learners identify areas which require improvement based on assessor feedback.</p> <p>Part 2 Students reflect on skill development in the AE course, identify their undergraduate aim and formulate an action plan for meeting entry requirements.</p> <p>Part 3 Students also complete a 10-day revision timetable prior to mid-course and final exams.</p>	5%
Portfolio	Students complete a five-part portfolio of work on Moodle which includes writing, listening and video logs.	5%
Final Exam	The final exam incorporates the skills of reading, writing, listening, and knowledge of content. The exam includes multiple choice questions, a range of short answer questions and an extended written response on an Australian contemporary issue.	40%

Subject:	Mathematics
Subject Outline:	<p>This subject is designed to further develop and consolidate mathematical skills required for undergraduate studies and will be assessed through recognition of prior learning. The high academic standards set as part of the entry requirements for the course mean that students must be able to demonstrate competency for the maths unit by sitting three examinations, completing a project and giving an oral presentation. Teacher guided instruction is not provided but self access resources are made available on the Moodle learning platform to help students prepare for the assessment tasks. A maths tutor will also be available for two hours per week to help students with the assessment tasks.</p> <p>The curriculum of this unit is as follows:</p> <ul style="list-style-type: none"> • Linear and quadratic equations • Sequences and series • Functions • Probability and statistics, including hypothesis testing • Geometry and Trigonometry including radian measure • Algebra and calculus (differentiation/integration)
Objectives:	<p>On completion a competent student should be able to:</p> <ol style="list-style-type: none"> 1. Apply mathematical concepts to solve mathematical problems ; 2. Apply mathematical concepts to real life/simulated situations ; 3. Draw and interpret graphs of mathematical functions ; 4. Apply mathematical concepts to solve a practical problem/s in a team situation ; 5. Deliver a presentation to a group, identifying and evaluating a mathematics problem.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> • UPRMTH401 Apply mathematical concepts to solve problems

Students are assessed through the following assessment activities:

Assessment Activity	Description	Weighting
Diagnostic Exam	Students will sit a diagnostic exam at the end of Week 2 to determine the amount of prior learning students have achieved prior to commencing this subject. The exam will assess students' competency in the entire curriculum of the course. The exam will not count towards an overall grade for the subject. However, students will have the opportunity to achieve competency in this subject towards the Certificate IV in Tertiary Preparation.	0%
Self-assessment Tests	These weekly online tests are designed to assist students with self-monitoring their progress in this subject.	5%
Mid Course Exam	Students will sit an exam at the halfway point in the course. This exam will contain a variety of knowledge, skill and procedures and problem solving questions from topics from the first half of the course.	40%
Project	Students are required to conduct a small research project.	10%
Seminar	Students are required to lead a brief seminar which involves presenting the completed project work. to the class	5%
Final Exam	This exam will contain a variety of knowledge, skill and procedures and problem solving questions from topics from the second half of the course.	40%

Subject:	Behavioural Science
Subject Outline:	<p>This subject is designed to introduce students to a range of concepts, principles and theories that have been developed to explain individual differences and the interactions between individuals and society. People working within the field of behavioural science set out to explore these aspects, and through scientific research, provide some explanation.</p> <p>Behavioural Science incorporates various disciplines exploring the why and how questions of life from multiple perspectives. For example, psychology has a focus on the individual, while sociology looks at how society can impact on an individual. During the subject, students are introduced to the areas of sociology, communication, and psychology.</p> <p>Students attend 8 hours of classes each week which are a mix of formal teacher lead instruction and tutorials during which they have the opportunity to test their understanding of the content and skills introduced by the teacher. Some teacher led sessions will focus specifically on the English language skills required to study Behavioural Science.</p> <p>For more detailed information on subject delivery refer to the work program.</p>
Objectives:	<p>On successful completion of this subject, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand and discuss behavioural science concepts, principles, and theories; 2. Demonstrate this understanding by producing a written research report; 3. Analyse, evaluate and present information on behavioural science topics; 4. Deliver an oral presentation on a behavioural science topic; 5. Evaluate and examine, using behavioural science theory, the relationship between both social and individual circumstances and situations; 6. Contribute to collaborative group discussion.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> ● UPRBEH401 Examine behavioural science theory and associated behaviour.

Students are assessed through the following assessment activities:

Assessment Activity	Description	Weighting
Seminar	The Seminar assessment includes a number of sections. The students negotiate a topic regarding a social issue with the teacher. They then research this topic, develop and deliver an oral seminar to the rest of the class with visual aids. This provides students with the opportunity to showcase their developing public speaking skills and demonstrate their capacity to apply sociological analysis to a current issue. Students need to demonstrate their ability to contribute to others' presentations through listening, questioning and discussion. Students will provide evidence of their research skills by submitting a Reference List (in APA style) containing at least two academic references.	25%
Mid Course Exam	This assessment evaluates the knowledge acquired by the students, as well as their ability to apply this knowledge. The exam includes multiple choice questions, various short answer questions and an extended response where students use a sociological perspective and theory to analyse a social issue.	25%
Research Report	Students conduct a literature review, on a given topic relating to behavioural science theory, then develop a hypothesis, and conduct primary research, then report on the outcomes of this. The report includes an introduction section (requiring the student to refer to at least four academic sources for background information). Students then complete the method section with tabulated results. Finally, a discussion section highlights how the results relate to the hypothesis and explores related implications. The research report and referencing, must be completed in the appropriate academic style as per APA formatting requirements.	25%
Final Exam	This assessment evaluates knowledge acquired by students as well as their ability to apply this knowledge to given scenarios. The exam includes multiple choice questions and various short answer questions on psychological theory including, research design, cognition, memory, social influence, classical and operant conditioning, and psychological health.	25%

Subject:	Biology
Subject Outline:	<p>This subject is designed to provide an understanding of natural systems and the living world. It introduces students to basic biological terminology, concepts and techniques and prepares them for further life science studies at the tertiary level.</p> <p>This subject aims to develop students' understanding of living organisms. Topics covered include Biochemistry, Cell Biology, Genetics, Classification, Evolution, Physiology of Plants and Animals, Ecology and Animal Behaviour. Practical activities and a Field Excursion are involved in the course.</p> <p>Students may use biological knowledge in degree programs such as Physiotherapy, Occupational Therapy, Dentistry, Veterinary Science and Medicine. There is a growing range of biology students choosing courses such as Food Science and Biotechnology.</p> <p>For more detailed information on subject delivery refer to the work program.</p>
Objectives:	<p>On completion, a competent student should be able to:</p> <ol style="list-style-type: none"> 1. Apply knowledge of biological facts and principles to solve problems; 2. Analyse, evaluate and present information on biological science topics; 3. Solve problems in biological science using complex reasoning; 4. Deliver a presentation on a biology topic and contribute to group discussion; 5. Evaluate the strengths and limitations of scientific work in relation to biological science; 6. Operate safely and proficiently while conducting biological science activities.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> • UPRBIO401 Investigate biological science problems

Students are assessed through the following assessment tasks:

Assessment Activity	Description	Weighting
Internet Research Task	Students complete an internet research task concerning a contemporary application of biotechnology, namely, stem cell research. Students investigate two ethical issues of stem cell research and submit their references and findings.	10%
Research Essay	Students complete a research essay on a current biological topic of their choice from a prescribed list.	15%
Mid Course Exam	Students sit an exam at the halfway point in the course. The exam consists of multiple choice and short answer questions covering topics from the first half of the course.	25%
Seminar	Students work in groups to prepare a PowerPoint presentation on the same topic as the written research assignment. The seminar communicates the main ideas of the topic to the class and fosters discussion within the group.	10%
Field Excursion and Report	As part of the IES Biology Course students will be expected to attend a Biology Field Excursion. Students will be provided with a Field Booklet and a Report on the excursion will be submitted as part of their assessment.	10%
Final Exam	The final exam consists of multiple choice and short answer questions covering topics from the second half of the course.	30%

Subject:	Chemistry
Subject Outline:	This subject is designed to provide a systematic treatment of all the major concepts of Chemistry, investigate some of the applications of these concepts in everyday life and discuss the role of science and technology in society. For more detailed information on subject delivery refer to the work program.
Objectives:	On completion of this course, a competent student should be able: <ol style="list-style-type: none"> 1. Apply knowledge of chemical facts and principles to solve problems; 2. Analyse, evaluate and present information on chemical science topics; 3. Solve problems in chemical science using complex reasoning; 4. Deliver a presentation on a chemistry topic and contribute to group discussion; 5. Evaluate the strengths and limitations of scientific work in relation to chemical science; 6. Operate safely and proficiently while conducting chemical science activities.
Assessment:	This subject teaches to and assesses students on their competence in respect of the following units of competency: <ul style="list-style-type: none"> • UPRCHE401 Investigate chemical science problems

Students are assessed through the following assessment tasks:

Assessment Activity	Description	Weighting
Internet Research Task	Students will conduct research on the internet to investigate the scientific method, current applications of chemical technology and ethics in the area of Chemistry.	10%
Research Essay	Students complete a written essay on a chemical idea or theme. This will be 1200 words in length, excluding tables, diagrams and reference list.	15%
Mid Course Exam	Students sit an exam at the halfway point in the course. The exam contains multiple choice, short answer, complex reasoning and problem solving questions covering topics in the first half of the course.	25%
Laboratory Practical	Students will complete a series of practical investigations at the UQ laboratories and prove themselves competent at following procedures and using laboratory equipment.	10%
Seminar	Students work in groups to prepare a seminar on a given topic. Students will be required to give an 8- 10 minute PowerPoint presentation to the class. This should summarise the findings of their research essay and foster discussion within their class.	10%
Final Exam	The exam contains multiple choice, short answer, complex reasoning and problem solving questions covering topics in the second half of the course.	30%

Subject:	Information Technology
Subject Outline:	<p>This subject provides an understanding of fundamental computer concepts and an opportunity to learn about and experience applications in the area of image manipulation, web coding, information systems and programming.</p> <p>For more detailed information on subject delivery refer to the work program.</p>
Objectives:	<p>On completion of this course, a competent student should be able to:</p> <ol style="list-style-type: none"> 1. Explain and apply knowledge of fundamental concepts of information technology; 2. Apply knowledge of web coding principles to create a web page; 3. Apply programming concepts to control objects in a web page; 4. Apply knowledge to design and implement an information system.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> • UPRICT401 Apply computer technology concepts and methods to execute digital media experiments • UPRICT402 Apply programming concepts to control objects in a simulated environment • ICTWEB429 Create a markup language document to specification • BSBITA411 Design and develop relational databases

Students are assessed through the following assessment tasks:

Assessment Activity	Description	Weighting
Online Activities	Students will complete a number of online activities that will cover the topics of computer fundamentals, image manipulation and social issues.	20%
Project	Students will work in groups to design and create a data-driven mock e-Commerce web site incorporating elements of database design, web coding and programming which will emulate that of a functional business.	40%
Practical Exams	There will be two computer lab based practical exams covering web coding, programming and information systems.	2 x 20%= 40%

Subject:	Physics
Subject Outline:	<p>This subject aims to develop students' understanding of the key areas of physics with an emphasis on the modern or quantum physics. The course is taught around the following themes: The Nature of Electricity; the Nature of Magnetism; the Nature of Waves; Quantum Physics and Nuclear Physics.</p> <p>For more detailed information on subject delivery refer to the work program.</p>
Objectives:	<p>On completion of this course, a competent student should be able to demonstrate:</p> <ol style="list-style-type: none"> 1. Apply knowledge of physics theories and principles to solve problems; 2. Analyse, evaluate and present information from a range of sources on physics topics; 3. Solve problems of physics using complex reasoning; 4. Deliver a presentation on a physics topic and contribute to group discussion; 5. Evaluate the strengths and limitations of scientific work in relation to physics; 6. Operate safely and proficiently while conducting physics activities.
Assessment:	<p>This subject teaches to and assesses students on their competence in respect of the following units of competency:</p> <ul style="list-style-type: none"> • UPRPHY401 Investigate physics problems

Students are assessed through the following assessment tasks:

Assessment Activity	Description	Weighting
Mid Course Exam	Students sit an examination at the halfway point of the course. This exam contains short answer, problem solving and complex reasoning questions from topics in the first half of the course.	25%
UQ Laboratory	Students will complete a series of practical investigations at the UQ laboratories and prove themselves competent at following procedures and using laboratory equipment. Students then write a formal laboratory report of approximately 1000 words on the investigation, consisting of three experiments performed using an experimental simulation.	10%
Research Report	Students are required to write a Research Report of approximately 1000 words in accepted academic format. This assessment requires that students prepare a research report on a contemporary Australian social issue within the creative industries. Students must conduct a literature review from a variety of sources, which investigate the physical optimisation techniques for an art gallery or museum space.	20%
Seminar	<p>Students work in groups to prepare and to present a seminar based on a given purpose statement.</p> <p>The group works together to research an alternative energy source that is sustainable and/or renewable, giving details of two specific contemporary applications of physics technology that use the alternative energy source. Research questions and independent and dependent variables are identified. Students also work collaboratively to consider ethical issues in Physics research.</p>	20%
Final Exam	This exam contains short answer, problem solving and complex reasoning questions from topics in the second half of the course.	25%