

Curtin University

## AUSTRALIA



Murdoch
UNIVERSITY


This information is correct as at 15 May 2019.
Ensure that you access the TISC website (www.tisc.edu.au) regularly to check for any updates.

## CONTENTS

If reproducing any materialfrom this brochure pleaseensure that acknowledgmentis given to the source:2022 AdmissionRequirements for SchoolLeavers
TISC, Perth, WesternAustralia.
'TISC' is a registered trademark.
'ATAR' is a registeredtrademark.
Abbreviations ..... 1
Foreword ..... 1
Disclaimer ..... 1
University Application Procedures ..... 2
Requirements for University Admission ..... 2

1. Western Australian Certificate of Education (WACE) ..... 3
2. Competence in English ..... 3
3. The Australian Tertiary Admission Rank ..... 3
4. Prerequisites ..... 5
Course Prerequisites ..... 6
Curtin University ..... 6-14
Edith Cowan University ..... 15-20
Murdoch University ..... 21-24
The University of Western Australia ..... 25-31
Addresses ..... 32

## ABBREVIATIONS

The following abbreviations have been used in this brochure:

RTO Registered Training Organisation
TEA Tertiary Entrance Aggregate
TISC Tertiary Institutions Service Centre
UWA The University of Western Australia
WACE Western Australian Certificate of Education

## FOREWORD

The following information is issued on behalf of the four Western Australian public universities. Its aim is to help Year 10 students to decide on their senior school courses, so that they meet university admission requirements. Remember to choose courses which will allow entry to a wide range of university courses.
This information is correct as at 15 May 2019 and is based on information provided by the participating universities and information available from the School Curriculum and Standards Authority (SCSA) at the time of publication.

This brochure applies to students who will be under 20 years of age on 28 February 2022 (ie those born on or after 1 March 2002). It is relevant only for admission in 2022 and is subject to change without notice.

WAYNE BETTS
TISC Executive Officer

# PARTICIPATING UNIVERSITIES 

Curtin University<br>Edith Cowan University

Murdoch University
The University of Western Australia

## DISCLAIMER

The universities reserve the right to change the content and/or method of presentation and/or the method of assessment of any unit of study, to withdraw any unit of study or program which they offer, to impose limitations on enrolment in any unit or program, and/or vary arrangements for any program. Enquiries regarding university admission requirements should be directed to the individual university(ies) concerned.

TISC and the participating universities cannot accept liability for any incorrect advice received from sources other than TISC, the universities or the universities' officially appointed agents.

## UNIVERSITY APPLICATION PROCEDURES

Information about applying to the universities and admission to undergraduate courses will be sent to Year 12 students at their schools in August 2021. Application will be via TISC's website.

The closing date for applications without incurring a late fee is normally the last working day in September. Offers of admission are made in the weeks following the release of Year 12 results.
Any further information about application procedures may be obtained from TISC. Enquiries about mid-year entry, external studies, postgraduate studies, timetables and particular course requirements should be directed to the university concerned.

You need to apply for admission through TISC if you:

- are an Australian citizen,
- are a New Zealand citizen,
- have been approved/granted Australian permanent resident status.

If you are not one of the above, you are an international student and you need to apply direct to the relevant university.

# REQUIREMENTS FOR UNIVERSITY ADMISSION 

To be considered for university admission as a school leaver applicant, normally you must -

1. meet the requirements for the Western Australian Certificate of Education (WACE) prescribed by the School Curriculum and Standards Authority, and
2. achieve competence in English as prescribed by the individual universities, and
3. obtain a sufficiently high ATAR/Selection Rank for entry to a particular course, and
4. satisfy any prerequisites or special requirements for entry to particular courses.

## PORTFOLIO ENTRY INTO SELECTED COURSES AT CURTIN UNIVERSITY

Alternative entry is available in selected courses for those who can demonstrate equivalence to Curtin's ATAR entry through the submission of a portfolio. You can visit
http://futurestudents.curtin.edu.au/school-leavers/how-to-get-in/flexible-entry-pathways/portfolio.cfm for further information about the portfolio requirements and application process. An interview might be required as part of the application process.

## EXPERIENCE BASED ENTRY SCHEME PATHWAY TO EDITH COWAN UNIVERSITY (ECU)

ECU offers an additional pathway for entry by school leaver students. To be considered for admission by Experience Based Entry Scheme Pathway, you must meet WACE, English competency requirements, satisfy any prerequisites or special requirements for entry to particular courses and have studied a minimum of four courses in Year 12, three of which need to be at ATAR level. Applications will be partially assessed prior to release of final results.

Detailed information about the requirements for the Experience Based Entry Scheme Pathway to ECU may be obtained from the Future Students team on 134328 or www.ecuworldready.com.au

## MEDIA AND CREATIVE PORTFOLIO ENTRY TO MURDOCH UNIVERSITY

In addition to the requirements outlined above, Murdoch University offers a portfolio pathway for admission to the Bachelor of Arts degrees in English and Creative Writing, and Theatre and Drama; Bachelor of Communication degrees in Journalism, and Strategic Communication; Bachelor of Creative Media degrees in Games Art and Design, Graphic Design, Photography, Screen Production, and Sound. You must satisfy Murdoch's English requirement, as outlined below, and should apply through TISC but submit your portfolio directly to Domestic Admissions at Murdoch University. Portfolios will be assessed by academic staff in the relevant discipline. For more information see https://portfolio.murdoch.edu.au/.

## ADMISSION OF STUDENTS FROM NON-STANDARD SCHOOLS

Normally all school leaver applicants for university are required to meet the admission requirements outlined in this brochure. You may not meet these admission requirements if you are attending a school that does not follow the standard Western Australian school system. If so, apply for admission to a university course through TISC, but include with your application a statement giving full details of your upper secondary school studies. Your application will be considered on an individual basis. The WACE, awarded by the School Curriculum and Standards Authority, is not required by any of the universities for students from non-standard schools.

## SCHOOL LEAVERS WITH AQF/TAFE/RTO QUALIFICATIONS

 Curtin UniversityCurtin University will expect school leaver age applicants who seek entry via this pathway to have, as a minimum:

- successfully completed an AQF/TAFE Certificate IV; and
- achieved WACE; and
- met Curtin University's competence in English requirement; and
- met course prerequisite requirements.


## Edith Cowan University

ECU will expect school leaver age applicants who seek entry via this pathway to have, as a minimum:

- successfully completed an ECU approved AQF/RTO Certificate IV as part of their Year 12 studies; and
- achieved WACE; and
- met ECU's competence in English requirement; and
- met course prerequisite requirements.

Students may apply direct to ECU.

## Murdoch University

School leavers will be eligible for admission into most Murdoch degree courses, with successful completion of a Certificate IV. They must also have:

- achieved WACE; and
- met Murdoch's competence in English requirement.


## The University of Western Australia

The University of Western Australia will accept an AQF/TAFE qualification at Diploma level as a basis of admission for the Bachelor of Arts, Biomedical Science, Commerce and Science courses. Separate evidence of English competence is also required. However, school leavers using a diploma achieved during their Years 11 and 12 must also have:

- achieved WACE; and
- met UWA's competence in English requirement.


## 1. WESTERN AUSTRALIAN CERTIFICATE OF EDUCATION (WACE)

You must satisfy the requirements of the WACE to enter all four universities, unless you are an applicant from a non-standard WA school. You can obtain detailed information about the WACE from the School Curriculum and Standards Authority, Mason Bird Building, Level 2, 303 Sevenoaks Street,
Cannington 6107, phone (08) 9273 6300, www.scsa.wa.edu.au.

## 2. COMPETENCE IN ENGLISH

For university admission purposes, usually you demonstrate competence in English by achieving the prescribed standard in one of the courses: English ATAR, Literature ATAR or English as an Additional Language/Dialect (EAL/D) ATAR.
You can meet the competence in English requirement with Year 12 results obtained in any calendar year.
English as an Additional Language/Dialect ATAR can only be taken by students who meet eligibility criteria set by the School Curriculum and Standards Authority. If English as an Additional Language/Dialect ATAR is not available at your school, you should take English ATAR course and also contact the universities for details about alternative acceptable English tests.

## ENGLISH ATAR; LITERATURE ATAR; ENGLISH AS AN ADDITIONAL LANGUAGE/DIALECT ATAR

## Curtin University

Murdoch University
The University of Western Australia
You must achieve a scaled score of at least 50.
Edith Cowan University
You must achieve

- a scaled score of at least 50 or
- a minimum final school letter grade of C achieved in Year 12.


## CONCESSIONS

Curtin University
The University of Western Australia
(a) If you have not met the requirement for one of these universities, that university will concede competence in English to you if you have

- achieved a moderated numeric school assessment or numeric examination assessment of at least 60 in English ATAR or Literature ATAR. For English as an Additional Language/Dialect ATAR, a moderated written school assessment or written exam mark of at least 60 is required.
(b) If you have not met requirement (a) above for Curtin University or The University of Western Australia, but you have:
- achieved an ATAR/Selection Rank above the minimum specified annually by the university, and
- achieved a scaled score less than 50 in English ATAR, Literature ATAR or English as an Additional Language/Dialect ATAR,
then you may demonstrate your competence in English by sitting the Special Tertiary Admissions Test (STAT), or another test of English approved by the university(ies) early in January.


## Murdoch University

(a) If you have not met the requirement for this university, Murdoch University will concede competence in English to you if you have

- achieved a moderated numeric school assessment or numeric examination assessment of at least 55 in English ATAR or Literature ATAR. For English as an

Additional Language or Dialect ATAR, a moderated written school assessment or written exam mark of at least 55 is required.
(b) If you have not met requirement (a) above for Murdoch University, but you have:

- achieved an ATAR above the minimum specified annually by the university, and
- achieved a scaled score less than 50 in English ATAR, Literature ATAR or English as an Additional Language/Dialect ATAR,
then you may demonstrate your competence in English by sitting the Special Tertiary Admissions Test (STAT), or another test of English approved by the university early in January.


## 3. THE AUSTRALIAN TERTIARY ADMISSION RANK (ATAR)

The Australian Tertiary Admission Rank is the basis of admission to most university courses. You are ranked in order of merit based on your ATAR.
The ATAR ranges between zero and 99.95. It reports your rank relative to all other WA students of Year 12 school leaving age and takes into account the number of students with a Tertiary Entrance Aggregate (TEA) as well as the number of people of Year 12 school leaving age in the population of this state. An ATAR of 75.00 indicates that you have an overall rating equal to or better than $75 \%$ of the Year 12 school leaving age population in Western Australia.

The ATAR is calculated using scaled scores in ATAR courses.

## SCALING

All course results will be scaled to ensure fairness to all students. A scaled score for an ATAR course can only be calculated if a student sits the ATAR course examination for that course. The Average Marks Scaling process is used to scale marks obtained in a course.

## CALCULATION OF THE TEA

The ATAR is derived from the Tertiary Entrance Aggregate (TEA).
In 2021, the TEA will be calculated by adding your best four scaled scores plus any applicable course-specific bonuses, as detailed below, based on the following rules:

- Courses which can be used in the ATAR are listed below.
- For all universities you may accumulate scaled scores which contribute to your ATAR over five consecutive years, with no course counting more than once. You may use previous scaled scores back to 2017.
- No more than two mathematics scaled scores can be used in the calculation of an ATAR.
- There are unacceptable course combinations whereby scores in both courses cannot both be used (see explanation under Unacceptable Course Combinations below).
- A LOTE bonus of $10 \%$ of a LOTE scaled score is added to the aggregate of the best four scaled scores, subject to no LOTE scaled score earlier than 2017 being used. If more than one LOTE has been sat, only one (the best) LOTE scaled score can be used as the LOTE bonus. You receive the LOTE bonus irrespective of whether your LOTE course scaled score was counted as one of the best four.
- A Mathematics bonus of $10 \%$ of the scaled score for each of Mathematics Methods ATAR and Mathematics Specialist ATAR is added to the aggregate of the best four scaled scores. You receive the Mathematics bonus irrespective of whether your Mathematics Methods ATAR and/or Mathematics Specialist ATAR course scaled scores are counted in the best four.
- In calculating the scaled score, equal weight is given to the final school mark and the final examination mark, except where courses are taken on a non-school basis (see explanation under Courses Studied on a Non-school Basis below).
- Scaled scores from previous study of WACE courses are on the same scale as scaled scores obtained from study in 2021 and will be used directly in the calculation of an ATAR, if applicable.
- The maximum TEA is 430 .


## TEA TO ATAR

TISC will construct a table to convert your TEA to an ATAR. The table takes into account the number of students with a TEA and the number of people of Year 12 school leaving age in the state. This table is constructed annually.

## PRIOR YEAR ATAR

If you have an ATAR from a previous year, you will be given the benefit of the higher of your previous ATAR and your current ATAR. If you have not previously satisfied the WACE requirement or a university's competence in English requirement, you must satisfy current requirements.

## COURSES WHICH ARE USED TO FORM THE ATAR

NOTE: There are two groups of courses: ATAR and General courses. Only ATAR courses can be included in the ATAR, and students must have sat the external ATAR course examination to obtain a scaled score.

| ATAR Courses |  |
| :---: | :---: |
| Aboriginal and Intercultural Studies ATAR | Indonesian: Background Language ATAR* |
| Accounting and Finance ATAR | Indonesian: First Language ATAR* |
| Ancient History ATAR | Indonesian: Second Language ATAR* |
| Animal Production Systems ATAR | Integrated Science ATAR |
| Applied Information Technology ATAR | Italian: Background Language ATAR* |
| Arabic ATAR* | Italian: Second Language ATAR* |
| Aviation ATAR | Japanese: Background Language ATAR* |
| Biology ATAR | Japanese: First Language ATAR* |
| Business Management and Enterprise ATAR | Japanese: Second Language ATAR* |
| Career and Enterprise ATAR | Korean: Background Language ATAR* |
| Chemistry ATAR | Literature ATAR |
| Children, Family and the Community ATAR | Malay: Background Speakers ATAR* |
| Chinese: Background Language ATAR* | Marine and Maritime Studies ATAR |
| Chinese: First Language ATAR* | Materials Design and Technology ATAR |
| Chinese: Second Language ATAR* | Mathematics Applications ATAR |
| Computer Science ATAR | Mathematics Methods ATAR |
| Dance ATAR | Mathematics Specialist ATAR |
| Design ATAR | Media Production and Analysis ATAR |
| Drama ATAR | Modern Greek ATAR* |
| Earth and Environmental Science ATAR | Modern History ATAR |
| Economics ATAR | Music ATAR |
| Engineering Studies ATAR | Outdoor Education ATAR |
| English ATAR | Philosophy and Ethics ATAR |
| English as an Additional Language or Dialect (EALD) ATAR | Physical Education Studies ATAR |
| Food Science and Technology ATAR | Physics ATAR |
| French: Background Language ATAR* | Plant Production Systems ATAR |
| French: Second Language ATAR* | Polish ATAR* |
| Geography ATAR | Politics and Law ATAR |
| German: Background Language ATAR* | Psychology ATAR |
| German: Second Language ATAR* | Religion and Life ATAR |
| Health Studies ATAR | Spanish ATAR* |
| Hebrew ATAR* | Vietnamese ATAR* |
| Human Biology ATAR | Visual Arts ATAR |

## NOTE:

1. Subject also to unacceptable combinations below, no more than two mathematics scaled scores can be used in the calculation of an ATAR.
2. There may be some additional interstate language courses* and examinations available in WA in 2021, which may be counted in the ATAR. Contact the School Curriculum and Standards Authority for details of availability.
3.     * indicates a Language Other Than English (LOTE) course.

## UNACCEPTABLE COURSE COMBINATIONS - ATAR COURSES

You cannot use the following course combinations in calculating your ATAR. It may be possible to take both courses but the result in only one may be used to calculate your ATAR.

Chemistry ATAR with Integrated Science ATAR
English ATAR with English as an Additional Language/Dialect ATAR
English ATAR with Literature ATAR
English as an Additional Language/Dialect ATAR with Literature ATAR
Mathematics Applications ATAR with Mathematics Methods ATAR
Mathematics Applications ATAR with Mathematics Specialist ATAR
Physics ATAR with Integrated Science ATAR
Chinese: Background Language ATAR with Chinese: Second Language ATAR
Chinese: Background Language ATAR with Chinese: First Language ATAR
Chinese: Second Language ATAR with Chinese: First Language ATAR
French: Background Language ATAR with French: Second Language ATAR
German: Background Language ATAR with German: Second Language ATAR
Indonesian: Background Language ATAR with Indonesian: First Language ATAR
Indonesian: Background Language ATAR with Indonesian: Second Language ATAR
Indonesian: First Language ATAR with Indonesian: Second Language ATAR
Indonesian: Background Language ATAR with Malay: Background Speakers ATAR
Indonesian: First Language ATAR with Malay: Background Speakers ATAR
Indonesian: Second Language ATAR with Malay: Background Speakers ATAR
Italian: Background Language ATAR with Italian: Second Language ATAR
Japanese: Background Language ATAR with Japanese: First Language ATAR
Japanese: Background Language ATAR with Japanese: Second Language ATAR
Japanese: Second Language ATAR with Japanese: First Language ATAR

## COURSES STUDIED ON A NON-SCHOOL BASIS

You may use results in courses sat on a non-school basis in the calculation of your ATAR. Your scaled score in courses you sit on a non-school basis will be based on your course examination mark only.

The School Curriculum and Standards Authority (SCSA) administers non-school candidature. SCSA places restrictions on school leaver students sitting ATAR courses as non-school candidates. If you wish to sit ATAR courses on a non-school basis contact SCSA, Mason Bird Building, Level 2, 303 Sevenoaks Street, Cannington 6107, phone (08) 9273 6300, www.scsa.wa.edu.au for advice. SCSA has a deadline for enrolling as a non-school candidate.
You will not be able to use results from courses sat on a nonschool basis to meet the WACE requirement.

## SELECTION RANKS

For most courses, 2021 Year 12 students will be selected for admission to university in 2022 on the basis of their
ATAR. However, some universities assign students who are eligible for alternative entry pathways a Selection Rank that is higher than their ATAR. For these students, selection into courses at the university concerned is based on this enhanced Selection Rank.

Eligibility for the entry pathways is based on specified criteria. TISC advises students of their eligibility at the time of the Year 12 results/ATAR release in late December, via the Universities Admission Advice Letter (UAAL). The appropriate Selection Rank is automatically applied for offer rounds.

For 2022 admission, Curtin University has the StepUp to Curtin Entry Pathway, ECU has the ECU Access Pathway, Murdoch University has RISE and UWA has the Broadway Alternative Entry Pathway. For further details about any of these pathways, see the individual university section on TISC's website.
For some university courses Selection Ranks are based on additional criteria as well as the ATAR. The criteria may include bridging/special course units, interviews, auditions, folio presentations, aptitude tests, fitness requirements, etc. Detailed information is available from the individual universities.

## 4. PREREQUISITES

Make sure that you satisfy the prerequisites for admission to the university course of your choice. Prerequisites are courses or special requirements that must be successfully completed for entry to particular university courses.

Generally, a scaled score of 50 or more in an ATAR course is required for prerequisites purposes. See individual university course entries which follow for details.

Prerequisites may be satisfied by results from the current year or previous four years.
Murdoch University does not require applicants to have undertaken specific prerequisite courses and instead provides introductory units to enable its students to become skilled in specific areas in which they may be lacking.

## COURSE PREREQUISITES

The following list outlines the prerequisite and recommended courses for entry to university courses in 2022. Additional requirements are also outlined.

## CURTIN UNIVERSITY

The following list outlines the prerequisite and recommended ATAR courses for entry to Curtin courses in 2022. Additional non-Year 12 requirements are also outlined. To satisfy the prerequisite requirements, a scaled score of 50 or more in the ATAR course(s) specified is required, unless otherwise specified. Note that where 'at least Mathematics Applications ATAR' is specified as a prerequisite, Mathematics Methods ATAR also satisfies the requirement.
${ }^{1}$ Biology ATAR, Chemistry ATAR, Earth and Environmental Science ATAR, Human Biology ATAR, Integrated Science ATAR, Physics ATAR or Psychology ATAR satisfies this requirement.
${ }^{2}$ Accreditation by the Actuaries Institute requires applicants to have a minimum ATAR/Selection Rank of 92.00.
${ }^{3}$ Animal Production Systems ATAR, Applied Information Technology ATAR, Aviation ATAR, Biology ATAR, Chemistry ATAR, Computer Science ATAR, Earth and Environmental Science ATAR, Engineering Studies ATAR, Human Biology ATAR, Integrated Science ATAR, Marine and Maritime Studies ATAR, Physics ATAR, Plant Production Systems ATAR or Psychology ATAR satisfies this requirement.
${ }^{4}$ Animal Production Systems ATAR, Biology ATAR, Chemistry ATAR, Earth and Environmental Science ATAR, Human Biology ATAR, Integrated Science ATAR, Marine and Maritime Studies ATAR, Physics ATAR, Plant Production Systems ATAR or Psychology ATAR satisfies this requirement.

| COURSE | PREREQUISITES | DESIRABLE |
| :--- | :--- | :--- |
| Actuarial Science (BSc) | Mathematics Methods ATAR and <br> ATAR/Selection Rank of 92.00 or equivalent ${ }^{2}$ | Mathematics Specialist ATAR |
| Advanced Science (Hons) - Agricultural <br> Science <br> (BSc AdvSci Hons) | Mathematics Methods ATAR | Biology ATAR, Chemistry ATAR |
| Advanced Science (Hons) - Chemistry <br> (BSc AdvSci Hons) | Mathematics Methods ATAR and <br> Chemistry ATAR | Mathematics Specialist ATAR, <br> Physics ATAR |
| Advanced Science (Hons) - Coastal and <br> Marine Science (BSc AdvSci Hons) | Mathematics Methods ATAR | One of Biology ATAR, Chemistry <br> ATAR, Marine and Maritime Studies |
| Advanced Science (Hons) - Computing <br> (BSc AdvSci Hons) | Mathematics Methods ATAR | ATAR |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Anthropology and Sociology (BA) | No prior study in a particular course is required |  |
| Applied Geology (BSc) | At least Mathematics Applications ATAR |  |
| Applied Geology (BSc) (Portfolio entry) | At least Mathematics Applications ATAR |  |
| Applied Geology/Environmental Biology (BSc/BSc) | At least Mathematics Applications ATAR and one Science ATAR course ${ }^{3}$ |  |
| Applied Geology/Finance (BSc/BCom) | At least Mathematics Applications ATAR |  |
| Applied Geology/Geophysics (BSc/BSc) | Mathematics Methods ATAR and Physics ATAR | Mathematics Specialist ATAR |
| Architectural Science (BAppSc) | No prior study in a particular course is required | Mathematics Applications ATAR, Visual Art ATAR and Physics ATAR |
| Arts/Commerce (BA/BCom) | No prior study in a particular course is required |  |
| Biochemistry (BSc) | At least Mathematics Applications ATAR and Chemistry ATAR | Mathematics Methods ATAR, Biology ATAR or Human Biology ATAR |
| Business Administration (BBA) | No prior study in a particular course is required |  |
| Chemical Engineering/Chemistry (BEng/BSc) | Mathematics Methods ATAR and Chemistry ATAR, and at least one of the following courses: Physics ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Chemical Engineering/Extractive Metallurgy (BEng/BSc) | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Chemistry (BSc) | At least Mathematics Applications ATAR and Chemistry ATAR | Mathematics Methods ATAR, Mathematics Specialist ATAR, Physics ATAR or Biology ATAR |
| Chinese (BA) | No prior study in a particular course is required |  |
| Civil and Construction Engineering/Mining (BEng/BSc) | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Coastal and Marine Science (BSc) | Mathematics Applications ATAR | One Science ATAR course ${ }^{3}$ |

Commerce (BCom)

- Accounting ${ }^{\#}$
- Advertising
- Business Information Systems (Professional)
- Business Information Technology (Professional)
- Business Law ${ }^{\#}$
- Economics
- Entrepreneurship
- Event Management
- Finance\#
- Human Resource Management
- International Business
- Logistics and Supply Chain Management
- Management\#
- Marketing\#
- Property Development and Valuation
- Public Relations
- Tourism and Hospitality
- Professional Human Resources Management
The following majors can only be chosen as a part of select double major combinations:
- Accounting Technologies
- Banking
- Financial Planning
- Industrial Relations
- Property
- Taxation ${ }^{\#}$

Depending on which business area you choose, you can select a single or double major.
\#These majors are also offered at the Kalgoorlie campus

Commerce (BCom) (Portfolio entry)
No prior study in a particular course is
Majors offered are the same as standard entry required
Commerce (BCom) above
Commerce (BCom) - Online

- Accounting
- Business Law
- Finance
- Management
- Marketing
- Taxation (This major must be completed as part of a double major with Accounting.)

| Computer Systems and Networking (BTech) | At least Mathematics Applications ATAR | Mathematics Methods ATAR or <br> Mathematics Specialist ATAR |
| :--- | :--- | :--- |
| Computing (BSc) | At least Mathematics Applications ATAR | Mathematics Methods ATAR or <br> Mathematics Specialist ATAR |
| Computing (BSc) (Portfolio entry) | At least Mathematics Applications ATAR | Mathematics Methods ATAR or <br> Mathematics Specialist ATAR |
| Construction Management (BAppSc) | At least Mathematics Applications ATAR | Mathematics Methods ATAR or <br> Mathematics Specialist ATAR |
| Creative Writing (BA) | No prior study in a particular course is <br> required |  |
| Creative Writing (BA) (Portfolio entry) | No prior study in a particular course is <br> required | Mathematics Methods ATAR |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Design (Animation and Games Design) (Portfolio entry) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Digital Design) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Digital Design) (Portfolio entry) | No prior study in a particular course is required | Design ATAR |
| Design (Fashion) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Fashion) (Portfolio entry) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Graphic Design) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Graphic Design) (Portfolio entry) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Photography) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Design (Photography) (Portfolio entry) (BDesign) | No prior study in a particular course is required | Design ATAR |
| Educational Studies (BEd) | No prior study in a particular course is required | At least Mathematics Applications ATAR |
| Education - Early Childhood Education (BEd) | No prior study in a particular course is required | At least Mathematics Applications ATAR |
| Education - Primary Education (BEd) | No prior study in a particular course is required | At least Mathematics Applications ATAR |
| Education - Primary Education (BEd) (Portfolio entry) | No prior study in a particular course is required. <br> Applicants will be required to attend an interview. | At least Mathematics Applications ATAR |
| Education - Secondary Education (BEd) | Applicants must satisfy the prerequisites for specific major(s) as noted below |  |
| - Arts Education: Drama, Visual Arts, Media Production and Analysis | No prior study in a particular subject is required | Mathematics Applications ATAR |
| - English Education | No prior study in a particular subject is required | Mathematics Applications ATAR |
| - Humanities and Social Sciences Education: Economics, History, Geography, Politics and Law | No prior study in a particular subject is required | Mathematics Applications ATAR |
| - Mathematics Education | Mathematics Methods ATAR | Mathematics Specialist ATAR |
| - Science (Chemistry) Education | Mathematics Applications ATAR and Chemistry ATAR | Physics ATAR and at least Mathematics Methods ATAR |
| - Science (Physics) Education (must be taken with a Mathematics minor teaching area) | Mathematics Methods ATAR and Physics ATAR | Mathematics Specialist ATAR and Chemistry ATAR |
| - Science (Biology) Education | Mathematics Applications ATAR | One Science ATAR course ${ }^{4}$ |
| - Science (Human Biology) Education | No prior study in a particular course is required | Chemistry ATAR, Mathematics Applications ATAR and Human Biology ATAR or Biology ATAR |
| - Science (Psychology) Education | No prior study in a particular course is required | Mathematics Applications ATAR and one Science ATAR course ${ }^{4}$ |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Electrical and Electronic <br> Engineering/Computer Science (BEng/BSc) | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Electrical and Electronic Engineering/Data Science (BEng/BSc) | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Electrical and Electronic Engineering/Physics (BEng/BSc) | Mathematics Methods ATAR and Physics ATAR and Chemistry ATAR | Mathematics Specialist ATAR and Engineering Studies ATAR |
| Engineering (BEng(Hons)) <br> - Chemical <br> - Civil and Construction <br> - Electrical and Electronic <br> - Mechanical <br> - Mechatronic <br> - Petroleum <br> - Metallurgical <br> - Mining | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Engineering/Commerce - 5.5 years (BEng/BCom) | Mathematics Methods ATAR and at least one of the following courses: Physics ATAR, Chemistry ATAR or Engineering Studies ATAR | Mathematics Specialist ATAR |
| Environmental Science (BSc) | Mathematics Applications ATAR | Chemistry ATAR or Biology ATAR |
| Exercise, Sports and Rehabilitation Science (BSc) | No prior study in a particular course is required | Physical Education Studies ATAR, Mathematics Applications ATAR and Human Biology ATAR |
| Extractive Metallurgy (BSc) | At least Mathematics Applications ATAR and Chemistry ATAR or Physics ATAR |  |
| Financial Mathematics (BSc) | Mathematics Methods ATAR | Mathematics Specialist ATAR |
| Fine Art (BA) | No prior study in a particular course is required |  |
| Fine Art (BA) (Portfolio entry) | No prior study in a particular course is required |  |
| Geography (BA) | No prior study in a particular course is required | Geography ATAR |
| Geophysics (BSc) | Mathematics Methods ATAR and Physics ATAR | Mathematics Specialist ATAR |
| Health Promotion (BSc) | No prior study in a particular course is required | One Science ATAR courses ${ }^{1}$ |
| Health Promotion/Health and Safety (BSc/BSc) | No prior study in a particular course is required | One of the Science ATAR course ${ }^{1}$ |
| Health Promotion/Nutrition (BSc) | Chemistry ATAR | Mathematics Applications ATAR |
| Health, Safety and Environment (BSc) | No prior study in a particular course is required | One Science ATAR course ${ }^{1}$ |
| Health Sciences (BSc) | No prior study in a particular course is required | One Science ATAR course ${ }^{1}$ |
| Health Sciences (BSc) (Portfolio entry) | No prior study in a particular course is required. <br> For detailed information about this entry pathway, please visit Portfolio page. | One Science ATAR course ${ }^{1}$ |


| COURSE | PREREQUISITES | DESIRABLE |
| :--- | :--- | :--- |
| History (BA) | No prior study in a particular course is <br> required | Modern History ATAR or Ancient <br> History ATAR |
| Human Biology Preclinical (BSc) | No prior study in a particular course is <br> required | Chemistry ATAR, Mathematics <br> Applications ATAR; and <br> Human Biology ATAR or Biology <br> ATAR |
| Industrial and Applied Mathematics (BSc) | Mathematics Methods ATAR | Mathematics Specialist ATAR |
| Industrial and Systems Engineering Major | Mathematics Methods ATAR and one of the <br> following: Physics ATAR, Chemistry ATAR, | Mathematics Specialist ATAR |
| (BEng(Hon)) | and Engineering Studies ATAR. |  |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Medicine/Surgery (MBBS) | Chemistry ATAR <br> To be eligible to participate in the selection process all applicants are required to undertake the University Clinical Aptitude Test ANZ (UCAT). Applicants will be selected for interview based on their UCAT ANZ score and predicted ATAR. | One of the following courses: Mathematics Applications ATAR, Mathematics Methods ATAR, Mathematics Specialist ATAR |
| Mine and Engineering Surveying (BSc) | At least Mathematics Applications ATAR | Mathematics Methods ATAR |
| Mining (BSc) | At least Mathematics Applications ATAR and Chemistry ATAR or Physics ATAR |  |
| Molecular Genetics and Biotechnology (BSc) | No prior study in a particular course is required | Chemistry ATAR, Mathematics Applications ATAR and Human Biology ATAR or Biology ATAR |
| Multidisciplinary Science (BSc) | At least Mathematics Applications ATAR | Mathematics Methods ATAR and one Science ATAR course ${ }^{3}$ |
| Multidisciplinary Science (BSc) (Portfolio entry) | At least Mathematics Applications ATAR | Mathematics Methods ATAR and one Science ATAR course ${ }^{3}$ |
| Nursing (General) (BSc) | No prior study in a particular course is required | Human Biology ATAR and Integrated Science ATAR |
| Nutrition and Food Science (BSc) | Chemistry ATAR | At least Mathematics Applications ATAR |
| Occupational Therapy (BSc) | Physical Education Studies ATAR or one Science ATAR course ${ }^{1}$ | Human Biology ATAR, Physics ATAR, at least Mathematics Applications ATAR |
| Optometry (BSc(Vision Science)/Master of Optometry) | No prior study in a particular course is required | At least Mathematics Applications ATAR, Physics ATAR, Chemistry ATAR, Human Biology ATAR |
| Oral Health Therapy (BSc) | No prior study in a particular course is required | Human Biology ATAR or Biology ATAR |
| Paramedicine (BSc) | In order to enrol in this course, students need to have received a conditional letter of employment from St. John Western Australia as a Student Ambulance Officer. No prior study in a particular course is required. Applicants are required to meet University academic and English language entry standards. To be successful in the St John Western Australia recruitment process you will need to be a permanent resident or citizen of Australia with permanent on-going working rights, meet academic, personal and physical requirements and have a full unrestricted ' C ' or ' CA ' class driver's license (with a good driving history with no more than six demerit points at time of application or serious convictions within the last four years). | Human Biology ATAR |
| Pharmacy (BPharm(Hons)) | Chemistry ATAR and Mathematics Applications ATAR | Human Biology ATAR or Biology ATAR |
| Physics (BSc) | Mathematics Methods ATAR and Physics ATAR | Chemistry ATAR and Mathematics Specialist ATAR |
| Physiotherapy (BSc) | One science ATAR course ${ }^{1}$ | At least Mathematics Applications ATAR, Physical Education Studies ATAR, and Health Studies ATAR |
| Professional Writing and Publishing (BA) | No prior study in a particular course is required |  |


| Psychology (BPsych) | No prior study in a particular course is required | At least Mathematics Applications ATAR, and Human Biology ATAR or Biology ATAR or Psychology ATAR |
| :---: | :---: | :---: |
| Psychology and Human Resource Management (BSc(Psych/HRM)) | No prior study in a particular course is required | At least Mathematics Applications ATAR, and Human Biology ATAR or Biology ATAR or Psychology ATAR |
| Psychology and Human Resource Management and Industrial Relations (BSc (Psych)/BCom (HRM \& IR)) | No prior study in a particular course is required | At least Mathematics Applications ATAR, and Human Biology ATAR or Biology ATAR or Psychology ATAR |
| Psychology/Marketing | No prior study in a particular course is required | Mathematics Applications ATAR, and Human Biology ATAR or Biology ATAR or Psychology ATAR |
| Radiation Therapy (BSc) | Physics ATAR and Mathematics Methods ATAR | Mathematics Specialist ATAR |
| Science / Arts (BSc/BA) | Chemistry: Mathematics Methods ATAR and Chemistry ATAR | Chemistry: Mathematics Specialist ATAR and Physics ATAR |
| Science <br> - Chemistry <br> - Coastal and Marine Science <br> - Data Science <br> - Environmental Biology <br> - Mathematics <br> - Physics | Coastal and Marine Science: Mathematics Applications ATAR and one Science ATAR course ${ }^{3}$ <br> Data Science: Mathematics Methods ATAR <br> Environmental Biology: Mathematics Applications ATAR and one Science ATAR course ${ }^{3}$ <br> Mathematics: Mathematics Methods ATAR <br> Physics: Mathematics Methods ATAR and Physics ATAR | Mathematics: Mathematics <br> Specialist ATAR <br> Physics: Mathematics Specialist ATAR and Chemistry ATAR |
| Arts <br> - Anthropology and Sociology <br> - Geography <br> - International Relations <br> - Japanese <br> - Internet Communications <br> - Professional Writing and Publishing | No prior study in a particular course is required |  |
| Science / Commerce (BSc/BCom) | Chemistry: Mathematics Methods ATAR and Chemistry ATAR | Chemistry: Mathematics Specialist ATAR and Physics ATAR |
| Science <br> - Chemistry <br> - Coastal and Marine Science <br> - Data Science <br> - Environmental Biology <br> - Mathematics <br> - Physics | Coastal and Marine Science: Mathematics Applications ATAR and one Science ATAR course ${ }^{3}$ <br> Data Science: Mathematics Methods ATAR <br> Environmental Biology: Mathematics Applications ATAR and one Science ATAR course ${ }^{3}$ |  |
|  | Mathematics: Mathematics Methods ATAR | Mathematics: Mathematics Specialist ATAR |
|  | Physics: Mathematics Methods ATAR and Physics ATAR | Physics: Mathematics Specialist ATAR and Chemistry ATAR |
| Commerce <br> - Economics <br> - Entrepreneurship <br> - Finance | No prior study in a particular course is required |  |
| Screen Arts (BA) | No prior study in a particular course is required |  |
| Social Work (BSW) | No prior study in a particular course is required |  |


| COURSE | PREREQUISITES | DESIRABLE |
| :--- | :--- | :--- |
| Speech Pathology (BSc) | One Science ATAR course ${ }^{1}$ | At least Mathematics Applications <br> ATAR |
| Surveying (BSurv) | At least Mathematics Applications ATAR | Mathematics Methods ATAR |
| Theatre Arts (BA) | No prior study in a particular course is <br> required | Drama ATAR |
| Theatre Arts (BA) (Portfolio Entry) | No prior study in a particular course is <br> required |  |
| UniReady Enabling Program | No prior study in a particular course is <br> required. Applicants must be over the <br> compulsory school age as defined by the <br> WA School Education Act 1999 in the year of <br> commencement of the course. |  |
| Urban \& Regional Planning (BA) | No prior study in a particular course is <br> required |  |

## EDITH COWAN UNIVERSITY

The following are the prerequisites which apply for entry to ECU courses (or specific major(s) within a course). To satisfy the prerequisite requirements, a minimum scaled score of 50 or more in the ATAR course is required. Additional non-Year 12 requirements are also outlined.

| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Arts | No prior study in a particular course is required |  |
| Arts / Commerce (double degree) | No prior study in a particular course is required |  |
| Arts / Media and Communications (double degree) | No prior study in a particular course is required |  |
| Arts Management | Interview and separate application to ECU |  |
| Arts / Science (double degree) |  |  |
| Data Science | A final school letter grade of $C$ or higher in Mathematics Methods ATAR (Year 11) or equivalent |  |
| Mathematics | Mathematics Methods ATAR or equivalent |  |
| Physics | Physics ATAR and Mathematics Methods ATAR or equivalent |  |
| Aviation | No prior study in a particular course is required |  |
| Biological Sciences | No prior study in a particular course is required |  |
| Biomedical Science |  |  |
| Data Science | A final school letter grade of $C$ or higher in Mathematics Methods ATAR (Year 11) or equivalent |  |
| Commerce | No prior study in a particular course is required |  |
| Commerce (HR Management) / Psychology (double degree) | No prior study in a particular course is required |  |
| Computer Science | No prior study in a particular course is required |  |
| Conservation and Wildlife Biology | No prior study in a particular course is required |  |
| Counselling | No prior study in a particular course is required |  |
| Counter Terrorism, Security and Intelligence | No prior study in a particular course is required |  |
| Criminology and Justice (Associate Degree) | No prior study in a particular course is required |  |
| Criminology and Justice (Bachelor Degree) | No prior study in a particular course is required |  |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Cyber Security | No prior study in a particular course is required |  |
| Design | No prior study in a particular course is required |  |
| Education (Early Childhood Studies) | Applicants for pre-service teacher education courses must satisfy nonacademic criteria. Applicants' nonacademic capabilities will be assessed based on the submission of a 500 -word personal statement. In this statement, applicants will outline why they wish to become a teacher. |  |
| Education (Primary) | Applicants for pre-service teacher education courses must satisfy nonacademic criteria. Applicants' nonacademic capabilities will be assessed based on the submission of a 500 -word personal statement. In this statement, applicants will outline why they wish to become a teacher. |  |
| Education (Secondary) | All applicants for pre-service teacher education courses must satisfy nonacademic criteria. Applicants' nonacademic capabilities will be assessed based on the submission of a 500 -word personal statement. In this statement, applicants will outline why they wish to become a teacher. |  |
|  | Applicants must also satisfy the prerequisites for specific major(s) as noted below |  |
| Biological Science Education | Biology ATAR, or Chemistry ATAR, or Earth and Environmental Science ATAR, or Human Biology ATAR, or Integrated Science ATAR or Physics ATAR or equivalents |  |
| Design and Technology Education | No prior study in a particular course is required |  |
| Drama Education | No prior study in a particular course is required |  |
| English Education | No prior study in a particular course is required |  |
| Health and Physical Education | No prior study in a particular course is required |  |
| Home Economics Education | No prior study in a particular course is required |  |
| Humanities and Social Science Education | No prior study in a particular course is required |  |
| Mathematics Education | Mathematics Methods ATAR or equivalent | Mathematics Specialist ATAR or equivalents |
| Music Education | Audition and separate application to ECU | Australian Music Examinations Board (AMEB) Grade V level of performance or equivalent |
| Visual Arts Education | No prior study in a particular course is required |  |


| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Engineering Honours | For all Engineering Degrees listed: |  |
|  | Mathematics Methods ATAR and Physics ATAR or Engineering Studies ATAR or equivalents | Mathematics Specialist ATAR or equivalents |
| Single Degrees |  |  |
| Civil |  |  |
| Civil and Environmental |  |  |
| Computer Systems |  |  |
| Electrical Power |  |  |
| Electrical and Renewable Energy |  |  |
| Electronics and Communications |  |  |
| Instrumentation Control \& |  |  |
| Automation |  |  |
| Marine and Offshore Systems |  |  |
| Mechanical |  |  |
| Mechatronics |  |  |
| Naval Architecture |  |  |
| Ocean Engineering |  |  |
| Petroleum Engineering |  |  |
| Double Degrees |  |  |
| Engineering / Commerce |  |  |
| Engineering (Computer Systems) / Computer Science |  |  |
| Engineering (Mechatronics) Honours / Technology (Motorsports) |  |  |
| Engineering / Laws |  |  |
| Engineering / Science |  |  |
| Engineering (Chemical) Honours | Mathematics Methods ATAR and Chemistry ATAR and Physics ATAR or Engineering Studies ATAR or equivalents | Mathematics Specialist ATAR or equivalents |
| Engineering Science | Mathematics Methods ATAR and Physics ATAR or Engineering Studies ATAR or equivalents | Mathematics Specialist ATAR or equivalents |
| Environmental Management | No prior study in a particular course is required |  |
| Exercise and Sports Science | No prior study in a particular course is required |  |



| COURSE | PREREQUISITES | DESIRABLE |
| :---: | :---: | :---: |
| Psychology, Criminology and Justice | No prior study in a particular course is required |  |
| Science | Applicants must satisfy the prerequisites for specific major(s) as noted below |  |
| Data Science | A final school letter grade of $C$ or higher in Mathematics Methods ATAR (Year 11) or equivalent |  |
| Mathematics | Mathematics Methods ATAR or Mathematics Specialist ATAR or equivalents |  |
| Physics | Physics ATAR and Mathematics Methods ATAR or equivalents |  |
| Science / Commerce (double degree) | Applicants must satisfy the prerequisites for specific major(s) as noted below |  |
| Data Science | A final school letter grade of $C$ or higher in Mathematics Methods ATAR (Year 11) or equivalent |  |
| Mathematics | Mathematics Methods ATAR or Mathematics Specialist ATAR or equivalents |  |
| Physics | Physics ATAR and Mathematics: Methods ATAR or equivalents |  |
| Science (Exercise and Sports Science) / Commerce (Sport Business) (double degree) | No prior study in a particular course is required |  |
| Security | No prior study in a particular course is required |  |
| Social Science | No prior study in a particular course is required |  |
| Social Work | No prior study in a particular course is required |  |
| Speech Pathology | No prior study in a particular course is required |  |
| Sport, Recreation and Event Management (Associate Degree) | No prior study in a particular course is required |  |
| Sport, Recreation and Event Management (Bachelor Degree) | No prior study in a particular course is required |  |
| Sustainability | No prior study in a particular course is required |  |
| Technology (Aeronautical) |  | Mathematics Methods ATAR and Physics ATAR or Engineering Studies ATAR or equivalents |
| Technology (Electronic and Computer Systems) |  | Mathematics Methods ATAR or equivalent |
| Technology (Engineering) |  | Mathematics Methods ATAR or equivalent |


| COURSE | PREREQUISITES |
| :--- | :--- |
| Technology (Motorsports) | DESIRABLE <br> Mathematics Methods ATAR and <br> Physics ATAR or Engineering Studies <br> ATAR or equivalents |
| University Preparation Course | No prior study in a particular course is <br> required |
| University Preparation Course (Education <br> Assistant Program) | No prior study in a particular course is <br> required |
| Youth Work | No prior study in a particular course is <br> required |

## MURDOCH UNIVERSITY

While many universities have prerequisite Year 12 courses for most of their courses, Murdoch University has a flexible degree structure that allows us to avoid this particular entrance requirement. Murdoch understands that students do not always make up their minds about the career they would like until much later than Year 10 and so Murdoch has 'make-up' units available in Chemistry, Mathematics and Physics for students who have not studied, or who have not performed well in, these courses at Year 12 level. We do list some recommended ATAR courses because a strong mathematical or chemistry background is an advantage in any science-based university course. However, they are purely a recommendation and do not affect entry. Note that for entry to all Murdoch's courses you must fulfil the University's requirements on English competence.

| COURSE | RECOMMENDED |
| :---: | :---: |
| Bachelor of Arts |  |
| Community Development | No specific courses |
| English and Creative Writing | No specific courses |
| Global Politics and Policy | No specific courses |
| History | No specific courses |
| International Aid and Development | No specific courses |
| Japanese | No specific courses |
| Philosophy | No specific courses |
| Psychology (BA) | No specific courses |
| Social Futures ** | No specific courses |
| Sociology | No specific courses |
| Sustainable Development | No specific courses |
| Theatre and Drama | No specific courses |
| Tourism and Events | No specific courses |
| Bachelor of Business |  |
| Accounting | Mathematics Applications ATAR |
| Banking | Mathematics Applications ATAR |
| Business Law | No specific courses |
| Finance | Mathematics Applications ATAR |
| Hospitality and Tourism Management | Mathematics Applications ATAR |
| Human Resource Management | No specific courses |
| International Business | No specific courses |
| Management | No specific courses |
| Marketing | No specific courses |
| Bachelor of Commerce |  |
| Accounting | Mathematics Applications ATAR |
| Banking | Mathematics Applications ATAR |
| Business Law | No specific courses |
| Finance | Mathematics Applications ATAR |
| Global Business and Politics | No specific courses |
| Hospitality and Tourism Management | Mathematics Applications ATAR |
| Human Resource Management | No specific courses |
| Management | No specific courses |


| COURSE | RECOMMENDED |
| :---: | :---: |
| Marketing | No specific courses |
| Commerce/Entrepreneurship and Innovation | No specific courses |
| Commerce/Science ** | Mathematics Applications, Chemistry ATAR |
| Bachelor of Communication |  |
| Global Media and Communication | No specific courses |
| Journalism | No specific courses |
| Strategic Communication | No specific courses |
| Creative Media/Communication | No specific courses |
| Bachelor of Creative Media |  |
| Games Art and Design | Visual Arts ATAR |
| Graphic Design | Visual Arts ATAR |
| Photography | No specific courses |
| Screen Production | No specific courses |
| Sound | No specific courses |
| Bachelor of Criminology |  |
| Crime Science | No specific courses |
| Criminal Behaviour | No specific courses |
| Legal Studies | No specific courses |
| White Collar and Corporate Crime | No specific courses |
| Criminology/Arts (Psychology) | No specific courses |
| Criminology/Communication | No specific courses |
| Criminology/Global Security | No specific courses |
| Criminology/Science | No specific courses |
| Bachelor of Education |  |
| Early Childhood and Primary Teaching | No specific courses |
| Primary Teaching | No specific courses |
| Primary, 1-10 Health and Physical Education | No specific courses |
| Bachelor of Education in Secondary Teaching |  |
| Advanced Mathematics | Mathematics Methods ATAR, Mathematics Specialist ATAR |
| Biology and Environmental Science | Biology ATAR, Mathematics Applications ATAR, Chemistry ATAR |
| Biology and Human Biology | Human Biology ATAR, Biology ATAR |
| Chemistry | Chemistry ATAR |
| Earth and Environmental Science | Mathematics Applications ATAR, Chemistry ATAR |
| English | English ATAR |
| Geography and Economics (HASS) | Geography ATAR, Economics ATAR |
| Health \& Physical Education | Physical Education Studies ATAR, Human Biology ATAR |
| History (HASS) | History ATAR |
| Mathematics | Mathematics Methods ATAR, Mathematics Specialist ATAR |

COURSE
Physics
Politics (HASS)

RECOMMENDED
Physics ATAR
Politics ATAR

## Bachelor of Engineering (Hons)

- Chemical and Metallurgical

Mathematics Methods ATAR, Mathematics Specialist ATAR,

- Environmental Engineering Physics ATAR
- Electrical Power Engineering
- Industrial Computer Systems Engineering
- Instrumentation and Control Engineering
- Renewable Energy Engineering

| Engineering/Commerce ** | Mathematics Methods ATAR, Mathematics Specialist ATAR, <br> Physics ATAR |
| :--- | :--- |
| Engineering/Entrepreneurship and Innovation ** | Mathematics Methods ATAR, Mathematics Specialist ATAR, <br> Physics ATAR |
| Bachelor of Food Science and Nutrition ** | Mathematics Application ATAR, Chemistry ATAR, <br> Biology ATAR |
| Food Science and Nutrition ** | No specific courses |
| Bachelor of Global Security | Mathematics Applications ATAR |
| Global Security | No specific courses |
| Bachelor of Information Technology and Business** | No specific courses |
| Information Technology and Business** | No specific courses |
| Bachelor of International Business | No specific courses |
| International Business | No specific courses |
| Bachelor of Laws | No specific courses |
| Law | No specific courses |
| Law/Arts | No specific courses |
| Law/Arts (Psychology) | No specific courses |
| Law/Business | No specific courses |
| Law/Commerce | Nourses courses |
| Law/Communication | Naw/Criminology |

Nursing
Mathematics Applications ATAR, Chemistry ATAR, Human Biology ATAR

## Bachelor of Science

| Animal Health | Mathematics Methods ATAR, Chemistry ATAR, Biology ATAR |
| :--- | :--- |
| Animal Science | Mathematics Methods ATAR, Chemistry ATAR, Biology ATAR |
| Biological Sciences | Mathematics Applications ATAR, Chemistry ATAR |
| Biomedical Science | Mathematics Applications ATAR, Chemistry ATAR, <br> Human Biology ATAR, Biology ATAR |


| COURSE | RECOMMENDED |
| :---: | :---: |
| Biomolecular Technologies and Bioinformatics ** | Mathematics Applications ATAR, Chemistry ATAR, Biology ATAR |
| Business Information Systems | Mathematics Applications ATAR |
| Chemistry | Mathematics Methods ATAR, Chemistry ATAR, Physics ATAR |
| Chiropractic Science and Clinical Chiropractic (BSc + BClinChiro) | Mathematics Applications ATAR, Chemistry ATAR, Physics ATAR, Human Biology ATAR, Biology ATAR |
| Computer Science | Mathematics Applications ATAR |
| Conservation and Wildlife Biology | Mathematics Applications ATAR, Chemistry ATAR |
| Crop and Pasture Science | Chemistry ATAR, Mathematics Applications ATAR |
| Cyber Security and Forensics | Mathematics Applications ATAR |
| Engineering Technology | Mathematics Methods ATAR4, Mathematics Specialist ATAR Physics ATAR |
| Environmental Management and Sustainability | Mathematics Applications ATAR, Chemistry ATAR |
| Environmental Science | Mathematics Applications ATAR, Chemistry ATAR |
| Forensic Biology and Toxicology | Mathematics Applications ATAR, Chemistry ATAR |
| Games Software Design and Production | Mathematics Applications ATAR |
| Games Technology | Mathematics Applications ATAR |
| Genetics and Molecular Biology | Mathematics Applications ATAR, Chemistry ATAR, Biology ATAR or Human Biology ATAR |
| Internetworking and Network Security | Mathematics Applications ATAR |
| Marine Biology | Mathematics Applications ATAR, Chemistry ATAR |
| Marine Science | Mathematics Applications ATAR, Chemistry ATAR |
| Mathematics and Statistics | Mathematics Specialist ATAR |
| Microbiology ** | Mathematics Applications ATAR, Chemistry ATAR, Biology ATAR |
| Mobile and Web Application Development | No specific courses |
| Physics and Nanotechnology | Mathematics Specialist ATAR, Physics ATAR |
| Psychology (BSc) | Mathematics Methods ATAR |
| Veterinary Science BSc (Veterinary Biology) which progresses into an integrated DVM (Doctor of Veterinary Medicine) | Mathematics Methods ATAR, Chemistry ATAR, Physics ATAR, Biology ATAR |
| Science/Laboratory Medicine (combined degree) | Chemistry ATAR, Mathematics Applications ATAR, Biology or Human Biology ATAR |
| Bachelor of Sport and Exercise Science |  |
| Sport and Exercise Science | Physical Education Studies ATAR, Human Biology ATAR |
| Sport and Exercise Science/Graduate Diploma Clinical Exercise Physiology | Physical Education Studies ATAR, Human Biology ATAR |
| Sport and Exercise Science/Science (Psychology) (combined degree) | Mathematical Methods ATAR, Human Biology ATAR, Physical Education studies ATAR. |
| Enabling course |  |
| OnTrack Enabling course | Completion of Year 11 and 12 with a B or higher in English General or a D or higher in an English ATAR course or Certificate III or higher. Applicants must be over the compulsory school age as defined by the WA School Education Act 1999 in the year of commencement of the course. |

## THE UNIVERSITY OF WESTERN AUSTRALIA

The following list outlines the prerequisite and recommended ATAR courses for entry to UWA courses in 2022. To satisfy the prerequisite requirements, a scaled score of 50 or more in the ATAR course is required.
If prerequisite courses have not been satisfied but other entry requirements have been met, an offer into the course will be given and additional units will be required as part of your degree.
Recommended courses provide valuable background that will assist you during your studies but do not affect selection into the course.
The UWA course model allows students to take two majors, the first major being the degree specific major. Nearly any other major in any degree program can be studied as a second major alongside the degree specific major.

## Undergraduate degrees

| Bachelor of Arts |  |  |
| :---: | :---: | :---: |
| Major | Prerequisites | Recommended Courses |
| Anthropology and Sociology | No previous study in a particular course is required |  |
| Archaeology | No previous study in a particular course is required |  |
| Architecture (Double Major) | No previous study in a particular course is required |  |
| Asian Studies | No previous study in a particular course is required |  |
| Chinese Studies | No previous study in a particular course is required |  |
| Classics and Ancient History | No previous study in a particular course is required |  |
| Communication and Media Studies | No previous study in a particular course is required |  |
| Criminology ${ }^{1}$ | No previous study in a particular course is required |  |
| English and Literary Studies | No previous study in a particular course is required |  |
| Fine Arts | No previous study in a particular course is required |  |
| French Studies | No previous study in a particular course is required |  |
| German Studies | No previous study in a particular course is required |  |
| History | No previous study in a particular course is required |  |
| History of Art | No previous study in a particular course is required |  |
| Human Geography and Planning | No previous study in a particular course is required |  |
| Indigenous Knowledge, History and Heritage | No previous study in a particular course is required |  |
| Indonesian Studies | No previous study in a particular course is required |  |
| Italian Studies | No previous study in a particular course is required |  |
| Japanese Studies | No previous study in a particular course is required |  |
| Korean Studies | No previous study in a particular course is required |  |
| Landscape Architecture | No previous study in a particular course is required |  |
| Law and Society | No previous study in a particular course is required |  |


| Major | Prerequisites | Recommended Courses |
| :---: | :---: | :---: |
| Linguistics | No previous study in a particular course is required |  |
| Music Electronic Music and Sound Design | No previous study in a particular course is required |  |
| Music General Studies | Complete an audition which will require demonstration of a musical background equivalent to Music ATAR or AMEB 5 |  |
| Music Specialist Studies | Complete an audition which will require demonstration of a musical background equivalent to Music ATAR or AMEB 7 |  |
| Music Studies | Complete an audition which will require demonstration of a musical background equivalent to Music ATAR or AMEB 5 |  |
| Philosophy | No previous study in a particular course is required |  |
| Philosophy, Politics and Economics | No previous study in a particular course is required |  |
| Political Science and International Relations | No previous study in a particular course is required |  |
| Psychology in Society | No previous study in a particular course is required |  |
| Psychology (Double Major) | No previous study in a particular course is required |  |
| Spanish Studies | No previous study in a particular course is required |  |
| Work and Employment Relations | No previous study in a particular course is required |  |
| Bachelor of Biomedical Science |  |  |
| Major | Prerequisites | Recommended Courses |
| Aboriginal Health and Wellbeing | Mathematics Applications ATAR OR a mathematics unit taken in the first year. | Mathematics Methods ATAR |
| Anatomy and Human Biology | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. |  |
| Biochemistry and Molecular Biology | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units; and Chemistry ATAR or a chemistry unit taken in the first year. | Biology ATAR |
| Exercise and Health | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Genetics | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. | Chemistry ATAR |
| Humanities in Health and Medicine | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Medical Sciences | Mathematics Applications ATAR with a mathematics unit taken in the first year; and Chemistry ATAR or a Chemistry unit taken in the first year |  |

## Bachelor of Biomedical Science

| Major | Prerequisites | Recommended Courses |
| :--- | :--- | :--- |
| Microbiology and Immunology | Chemistry ATAR or a Chemistry unit taken in <br> the first year | Mathematics Applications ATAR and <br> Biology ATAR or Human Biology ATAR |
| Neuroscience | Mathematics Methods ATAR OR Mathematics <br> Applications ATAR with a mathematics unit <br> taken in the first year. Students without ATAR <br> Mathematics will take two first year <br> mathematics units. | Chemistry ATAR and Physics ATAR |
| Pathology and Laboratory | Mathematics Applications ATAR OR a <br> mathematics unit taken in the first year | Mathematics Methods ATAR and <br> Medicine |
| Pharmacology | Mathematics Applications ATAR OR a <br> mathematics unit taken in the first year. | Mathematics Methods ATAR and <br> Chemistry ATAR |
| Physiology | Mathematics Methods ATAR OR Mathematics <br> Applications ATAR with a mathematics unit <br> taken in the first year. Students without ATAR <br> Mathematics will take two first year <br> mathematics units. | Chemistry ATAR and Physics ATAR |
| Population Health | Mathematics Applications ATAR OR a <br> mathematics unit taken in the first year. | Mathematics Methods ATAR |
| Science Communication | Mathematics Applications ATAR OR a <br> mathematics unit taken in the first year | Mathematics Methods ATAR |


| Bachelor of Commerce ${ }^{2,3}$ |  |  |
| :--- | :--- | :--- |
| Major | Prerequisites | Recommended Courses |
| Accounting | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Business Law | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Economics | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Finance | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Human Resource Management | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Management | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Marketing | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |
| Professional Economics | Mathematics Applications ATAR plus a <br> mathematics unit in your first year | Mathematics Methods ATAR |


| Bachelor of Science |  |  |
| :--- | :--- | :--- |
| Major | Prerequisites <br> Applications ATAR with a mathematics unit <br> Applices <br> taken in the first year. Students without ATAR <br> Mathematics will take two first year <br> mathematics units; and <br> Chemistry ATAR or an additional chemistry <br> unit taken in the first year. | Recommended Courses |
| Anatomy and Human Biology | Mathematics Methods ATAR OR Mathematics <br> Applications ATAR with a mathematics unit <br> taken in the first year. Students without ATAR <br> Mathematics will take two first year <br> mathematics units. |  |


| Bachelor of Science |  |  |
| :--- | :--- | :--- |
| Major | Prerequisites | Recommended Courses |
| Biochemistry and Molecular | Mathematics Methods ATAR OR Mathematics <br> Applications ATAR with a mathematics unit <br> taken in the first year. Students without ATAR | Biology ATAR |
|  | Mathematics will take two first year <br> mathematics units; and <br> Chemistry ATAR or a Chemistry unit taken in <br> the first year. |  |
| Botany | Mathematics Methods ATAR OR Mathematics | Chemistry ATAR |
| Applications ATAR with a mathematics unit |  |  |
| taken in the first year. Students without ATAR |  |  |
| Mathematics will take two first year |  |  |
| mathematics units. |  |  |


| Major | Prerequisites | Recommended Courses |
| :---: | :---: | :---: |
| Geology | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. |  |
| Marine Science | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year | Chemistry ATAR |
| Mathematics and Statistics | Mathematics Specialist ATAR and Mathematics Methods ATAR OR Mathematics Methods ATAR with an additional mathematics unit taken in the first year | Mathematics Specialist ATAR and Mathematics Methods ATAR |
| Microbiology and Immunology | Chemistry ATAR or a chemistry unit taken in the first year | Mathematics Applications ATAR and Biology ATAR or Human Biology ATAR |
| Natural Resource Management | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. |  |
| Neuroscience | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. | Chemistry ATAR and Physics ATAR |
| Physics | Mathematics Specialist ATAR, Mathematics Methods ATAR and Physics ATAR OR Mathematics Methods ATAR and Physics ATAR, with an additional mathematics unit taken in the first year. | Mathematics Specialist ATAR Mathematics Methods ATAR and Physics ATAR |
| Physiology | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. | Chemistry ATAR and Physics ATAR |
| Psychological Science | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Psychology (Double Major) | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Science Communication | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Sport Science | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Sport Science, Exercise and Health (Double Major) | Mathematics Applications ATAR OR a mathematics unit taken in the first year | Mathematics Methods ATAR |
| Zoology | Mathematics Methods ATAR OR Mathematics Applications ATAR with a mathematics unit taken in the first year. Students without ATAR Mathematics will take two first year mathematics units. | Chemistry ATAR |

Bachelor of Philosophy (Honours)

| Major | Prerequisites | Recommended Courses |
| :--- | :--- | :--- |
| Any of the majors listed above | ATAR (or equivalent) of at least 98.00, refer to |  |
| may be studied within the | the individual majors section for course <br> BPhil(Hons) | apply.) <br> aprmation. (Additional selection criteria may |


| Area of study | Entry requirements |
| :--- | :--- |
| Architecture | Completion of a bachelor's degree, with a UWA weighted average mark of at least $60 \%$. |
| Dentistry | Completion of a bachelor's degree, with a UWA Grade Point Average of at least 5.5 |
| Engineering | Completion of a bachelor's degree with a major in Engineering Science, with a UWA weighted <br> average mark of at least 50\%. |
| Landscape Architecture | Completion of a bachelor's degree, with aa UWA weighted average mark of at least $60 \%$. <br> LawCompletion of a bachelor's degree, with a UWA Grade Point Average of at least $5.5^{6}$, or a Weighted <br> Average Mark of 65\%. |
| Medicine | Completion of a bachelor's degree, with a UWA Grade Point Average of at least $5.5^{7}$. <br> Charmacy <br> Completion of a bachelor's degree, with a UWA Grade Point Average of at least 5.0 together with |
| Podiatric Medicine | Completion of a bachelor's degree, with a UWA Grade Point Average of at least 5.0. . Certain <br> prerequisite units may be required. |
| Social Work | Completion of a relevant UWA bachelor's degree. <br> Translation StudiesCompletion of a bachelor's degree, with a UWA Weighted Average Mark of $65 \%$ in the Level 3 units <br> of a relevant major. |

## Popular Graduate Pathways

| Area of study | Entry requirements |
| :--- | :--- |
| Agricultural Science | Completion of a bachelor degree with a relevant Major and a UWA Weighted Average Mark of at <br> least 50\% in your degree studies. |
| Applied Finance | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\%. |
| Biological Science | Completion of a bachelor degree with a UWA Weighted Average Mark Major and an average of at <br> least 50\% in your degree studies. |
| Biomedical Science | Completion of a bachelor degree with a relevant Major and a UWA Weighted Average Mark of at <br> least 50\% in your degree studies. |
| Biotechnology | Completion of a bachelor degree with a relevant Major and a UWA Weighted Average Mark of at <br> least 50\% in your degree studies. |
| Business Analytics ${ }^{1}$ | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\%. |
|  <br> Logistics Management | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\%. |
| Commerce a bachelor degree with a UWA Weighted Average Mark of at least 60\%. |  |
| Environmental Science | Completion of a bachelor degree with a relevant Major and a UWA Weighted Average Mark of at <br> least 50\% in your degree studies. |
| Forensic Anthropology | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 50\% |
|  <br> Employment Relations | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\% |
| International Relations | Completion of a bachelor degree with a relevant Major and a UWA Weighted Average Mark of at <br> least 65\% in level 3 units of a relevant major. <br> Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\%. |
| Marketing |  |


| Area of study | Entry requirements |
| :--- | :--- |
| Professional Accounting | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\% |
| Public Policy | Completion of a bachelor degree with a UWA Weighted Average Mark of at least 60\% |
| Taxation Law | Completion of a bachelor degree with a Business Law Major and a UWA Weighted Average Mark of <br> at least 60\% in your degree studies. |
| Teaching (Early <br> Childhood) | Completion of a bachelor's degree other than a Bachelor of Education and at least one year of the <br> bachelor's degree relevant to one or more learning areas in the Early Childhood school curriculum. |
| Teaching (Primary) | Completion of a bachelor's degree other than a Bachelor of Education, and at least one year of the <br> bachelor's degree relevant to one or more learning areas in the Primary school curriculum. |
| Teaching (Secondary) | Completion of a bachelor's degree other than a Bachelor of Education, with a major relevant to <br> secondary teaching curriculum majors offered by UWA 9 |

## NOTES:

1. Subject to final approval.
2. If you do not have a scaled score of 50 or higher in Mathematics Methods ATAR, you will need to successfully complete mathematics units as part of your degree.
3. Prerequisite courses may not apply to Commerce majors if being completed as a second major. Students without Mathematics may have a restricted choice of units in the Finance and Economics majors.
4. A number of Direct Pathway Places are available, providing entry into the relevant undergraduate course and a reserved place in the postgraduate course on the basis of Year 12 results. Check http://www.studyat.uwa.edu.au/undergraduate/requirements/direct-pathways for details.
5. A Grade Point Average of 5.5 is equivalent to an overall subject average of approximately $65-70 \%$. A Grade Point Average of 5.0 is equivalent to an overall subject average of approximately $60-65 \%$.
6. A competitive selection process will apply. Additional selection criteria may apply.
7. A competitive selection process and additional selection criteria will apply. Undergraduate studies may be undertaken in any area. Some study of physics at Year 12 level and biology and chemistry at first-year university level is recommended.
8. A bachelor's degree in arts, social sciences, psychology, health sciences (including medicine, nursing, public health, and physiotherapy), education, and law may be considered.
9. An honours degree in Psychology at a satisfactory level is required for School Psychology majors.

## ADDRESSES

BENTLEY CAMPUS
Kent Street
BENTLEY WA 6102
GPO Box U1987
PERTH WA 6845
Telephone: (08) 92667805
Web: www.curtin.edu.au
Email: admissions@curtin.edu.au

## CURTIN UNIVERSITY

KALGOORLIE CAMPUS
For mining courses:
Western Australian School of Mines (WASM)
Egan Street
KALGOORLIE WA 6430
Telephone: 1800688377
Web: www.wasm.curtin.edu.au

COUNTRY CENTRES
Limited assistance will be available at country centres listed below, please contact 1800469164.
Albany
Kalgoorlie

## EDITH COWAN UNIVERSITY

## 270 Joondalup Drive

JOONDALUP WA 6027
Telephone: 134328
Overseas: (61 8) 63040000
Email: futurestudy@ecu.edu.au
Web: www.ecu.getready.com.au/
Including Joondalup, Mt Lawley, South West Campus (Bunbury) and Margaret River Education Centre

## MURDOCH UNIVERSITY

Perth Campus
THE STUDENT CENTRE
South Street
MURDOCH WA 6150
Telephone: 1300 MURDOCH (1300 687
3624)
Online enquiries: ask.murdoch.edu.au
Web: www.murdoch.edu.au

Mandurah Campus (Peel)
THE STUDENT CENTRE
Education Drive
MANDURAH WA 6210
Telephone: 1300 MURDOCH (1300 687
3624)

Online enquiries: ask.murdoch.edu.au
Web: www.murdoch.edu.au

Rockingham Campus
THE STUDENT CENTRE
Dixon Road
ROCKINGHAM WA 6168
Telephone: 1300 MURDOCH (1300 687
3624)

Online enquiries: ask.murdoch.edu.au
Web: www.murdoch.edu.au

## THE UNIVERSITY OF WESTERN AUSTRALIA

ADMISSIONS
Mail Bag M353
35 Stirling Highway
CRAWLEY WA 6009
Telephone: (08) 64882477
Country Callers 1800653050
Online enquiries: ask.uwa.edu.au
Web: www.studyat.uwa.edu.au

ALBANY CENTRE
35 Stirling Terrace
ALBANY WA 6330
Telephone: (08) 98420888
Email: albany.centre@uwa.edu.au
Web: www.albany.uwa.edu.au

## TERTIARY INSTITUTIONS SERVICE CENTRE

