

Handbook 2020

Coursecode

B1317A

Murdoch University

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Cancellation of Courses, Majors, Minors and Units

The University reserves the right to cancel, without notice, any course, major, minor or unit if the number of students enrolled falls below limits set by the University or in other unforeseen circumstances.

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Cancellation of Courses, Majors, Minors and Units

The University reserves the right to cancel, without notice, any course, major, minor or unit if the number of students enrolled falls below limits set by the University or in other unforeseen circumstances.

Group	Course	Offerings
Engineering Technology	Engineering Technology (BSc)	• Murdoch campus (internal)

ENGINEERING TECHNOLOGY

ENGINEERING TECHNOLOGY (BSC)

Bachelor of Science (BSc) in Engineering Technology

Employment Prospects:

This degree offers study suitable for graduates to enter a wide range of engineering and applied science careers as Engineering Technologists. Depending on the specific units chosen, graduates may pursue careers in industries associated with computing and information technology, industrial computer systems, instrumentation and control.

Advanced Standing:

This major is designed to admit students either through direct entry to the University, or via TAFE. Students who have completed appropriate TAFE qualifications may be admitted directly into the second year of the major.

Upon successful completion of this course, it is possible with one further year of study to upgrade to a Bachelor of Engineering Honours degree. It should be noted that if a sufficient level of performance is achieved in the first year, it is also possible to transfer into the Engineering course in the second year of study.

Duration: 3 years full-time or part-time equivalent

Environmental Engineering

Availability:

- Murdoch campus (internal)

Course Codes: B1317 B1317A

The approach of the technologist is, wherever possible, to use and adapt 'off the shelf' building blocks and components to create and/or modify the required software and/or hardware. In this degree students are free to choose from a range of units; however, there are four key areas of study:

Industrial Computer Systems: concerned with the specification, design, implementation and commissioning of industrial control systems. It is a combination of both computer hardware and software to meet the requirements of the industrial measurement and control application.

Instrumentation and Control: concerned with instrumentation installation, specification, systems monitoring and operational control of a wide range of manufacturing and process oriented industries.

Electrical Power: associated with power system elements including power generators, transmission and distribution system components as well as power system analysis, operation and control.

Renewable Energy Systems: concerned with the study and use of renewable energy technologies and energy sources with an emphasis on electrical generation.

Murdoch's Bachelor of Science is a flexible degree which gives you the opportunity to build deep understanding and practical experience as well as to supplement your studies by engaging with industry and the community on relevant problems. You can even undertake studies through another discipline to broaden your understanding of the way in which science operates in relation to social, business, health and policy environments.

Admission Requirements (Onshore):

As per normal undergraduate admission requirements. It is recommended that students have completed the equivalent of WACE Mathematics 3C/3D, Mathematics: Specialist 3C/3D and WACE Physics 3A/3B. Students who do not have the necessary Mathematical and Physics prerequisite knowledge may take an extra semester to complete their studies.

Major Prerequisites

Mathematics Background

Students may need to complete one prerequisite unit depending on their background in mathematics with either a C grade in Mathematics Specialist ATAR (or Mathematics: Specialist 3C/3D) or a final scaled score of 60 percent or more in Mathematics Methods ATAR (or Mathematics 3C/3D). Students without this background will need to complete:

MAS164 Fundamentals of Mathematics - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

Students who have completed previous mathematics not stated above should consult the Academic Chair for clarification of their enrolment requirements.

Physics Background

Students may need to complete one prerequisite unit depending on their background in physics and their final scaled score in Physics 3A/3B (or equivalent) within the past three years.

Physics 3A/3B with a final scaled score of 60 percent or more

OR

PEN120 General Physics - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

Students who have completed previous physics not stated above should consult the Academic Chair for clarification of their enrolment requirements.

Course Structure - 72 credit points

Part I - 24 credit points

Year 1 - 24 credit points

Transition Unit - 3 credit points

BSC100 Building Blocks for Science Students - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

Breadth Unit for Degree - 3 credit points

MSP100 Career Learning: Managing Your Career - 3 points
MURDOCH: S1-external, S2-external

Core Units - 9 credit points

ENG192 Energy, Mass and Flow - 3 points
MURDOCH: S2-internal

MAS182 Applied Mathematics - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

ENG225 Circuits and Systems I - 3 points
MURDOCH: S1-internal

General Electives - 9 credit points

Select from any 100-level units offered by the University, subject to individual unit prerequisites. Students are advised to consider using General Elective points to meet the requirements of a second major or minor. Any recommended double majors and minors will be included in the major's description.

Part II - 48 credit points

University-Wide Breadth Units - 6 credit points

Select from the prescribed list of University-Wide Breadth Units. A unit cannot be used to satisfy both this Breadth Unit requirement and the requirements of a major or minor. If taken at 100 level the unit(s) will be attributed to Part I. Note that no more than 30 credit points at Part I may be credited towards course completion requirements.

Year 2 - 21 credit points

Research Skills Unit - 3 credit points

The Research Skills unit to be taken will depend on the student's Primary Major enrolment. Select from the following.

For Primary Major in Cognitive Neuroscience and Health Psychology

BSC201 Psychology: Measurement, Design and Analysis - 3 points
MURDOCH: S1-internal

For Primary Majors in the Health Sciences, as listed

Primary Major in Chiropractic Science, Exercise Physiology, Movement Science, or Sport and Health Science:

BSC206 Introduction to Research Methodology and Evidence Based Practice - 3 points
MURDOCH: S2-internal

For All Other Primary Majors excluding Information Technology

Select from the Research Skills Unit List recommended for each major. A unit cannot be used to satisfy both this Research Skills Unit requirement and the requirements of a major or minor. If taken at 100 level the unit(s) will be attributed to Part I. Note that no more than 30 credit points at Part I may be credited towards course completion requirements.

Core Units - 12 credit points

ENG207 Principles of Electronic Instrumentation - 3 points
MURDOCH: S2-internal

Plus one unit from each of the following Groups.

Group 1

ENG297 Circuits and Systems II - 3 points
MURDOCH: S2-internal

ENG298 Principles of Process Engineering - 3 points
MURDOCH: S1-internal

Group 2

MAS221 Mathematical Modelling - 3 points
MURDOCH: S2-internal, S2-external

MAS220 Mathematical Methods - 3 points
MURDOCH: S1-internal, S1-external

Group 3

ENG299 Control Systems and Process Dynamics - 3 points
MURDOCH: S1-internal

ENG294 Discrete Time Systems - 3 points
MURDOCH: S2-internal

General Electives - 6 credit points

Select from any 200- to 400-level units offered by the University, subject to individual unit prerequisites. Students are advised to consider using General Elective points to meet the requirements of a second major or minor. Any recommended double majors and minors will be included in the major's description.

Year 3 - 21 credit points**Research Skills Unit - 3 credit points**

The Research Skills unit to be taken will depend on the student's Primary Major enrolment. Select from the following.

For Primary Major in Cognitive Neuroscience and Health Psychology

BSC302 Advanced Quantitative Research Methods - 3 points
MURDOCH: S2-internal

For Primary Majors in the Health Sciences, as listed

Primary major in Chiropractic Science, Movement Science, Sport and Health Science:

BSC306 Research and Evidence Based Practice - 3 points
MURDOCH: S1-internal

For All Other Primary Majors excluding Information Technology

Select from the Research Skills Unit List recommended for each major. A unit cannot be used to satisfy both this Research Skills Unit requirement and the requirements of a major or minor. If taken at 100 level the unit(s) will be attributed to Part I. Note that no more than 30 credit points at Part I may be credited towards course completion requirements.

Core Units - 6 credit points

Select one unit from Group 4 and one unit from Group 5.

Group 4

ENG308 Advanced Process and Instrumentation Engineering - 3 points
MURDOCH: S1-internal

ENG311 PLC Systems - 3 points
MURDOCH: S1-internal

ENG317 Electromechanical Energy Conversion - 3 points
MURDOCH: S1-internal

ENG309 Process Control Engineering I - 3 points
MURDOCH: S1-internal

ENG318 Power Electronic Converters and Systems - 3 points
MURDOCH: S1-internal

ENG337 Applied Photovoltaics - 3 points
MURDOCH: S2-internal

Group 5

ENG323 Power Transmission and Distribution Networks - 3 points
MURDOCH: S2-internal

ENG319 Real Time and Embedded Systems - 3 points
MURDOCH: S2-internal

ENG339 Wind and Hydro Power Systems - 3 points
MURDOCH: S2-internal

ENG338 Energy Supply and Management - 3 points
MURDOCH: S1-internal

ENG321 Instrument and Communication Systems - 3 points
MURDOCH: S2-internal

ENG322 Process Control Engineering II - 3 points
MURDOCH: S2-internal

General Electives - 12 credit points

Select from any 200- to 400-level units offered by the University, subject to individual unit prerequisites. Students are advised to consider using General Elective points to meet the requirements of a second major or minor. Any recommended double majors and minors will be included in the major's description.

Research Skills Unit List**Animal Health Major**

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO282 Molecular Biology - 3 points

MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

COM103 Foundations of Communication - 3 points
MURDOCH: S2-internal, S2-external

BMS317 Human Pharmacology - 3 points
MURDOCH: S1-internal

Animal Science Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

COM103 Foundations of Communication - 3 points
MURDOCH: S2-internal, S2-external

Crop and Pasture Science

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BIO257 Australian Biodiversity - 3 points
MURDOCH: S2-internal

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

Biological Sciences Major

BSC200 Research in the Physical and Life Sciences - 3 points

Not available this year

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

BIO377 Marine Ecology - 3 points
MURDOCH: S1-internal

BIO388 Forensic Science and Miscarriages of Justice - 3 points
MURDOCH: W-internal

CHE207 Chemical Analysis - 3 points
MURDOCH: S1-internal, S1-external

BIO393 Tropical Marine Biology - 3 points
MURDOCH: W-internal (quota of 40 places)

Conservation and Wildlife Biology Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

BIO377 Marine Ecology - 3 points
MURDOCH: S1-internal

ENV328 Environmental Policy and Law - 3 points
MURDOCH: S1-internal, S1-external

SUS305 Economics of Sustainability - 3 points
MURDOCH: W-internal, W-external

COD302 Creative Ways to Work with Community - 3 points
MURDOCH: S2-internal, S2-external

BIO247 Biochemistry - 3 points
MURDOCH: S2-internal

ENV332 Managing Wetlands and Water - 3 points
MURDOCH: S2-internal, S2-external

BIO393 Tropical Marine Biology - 3 points
MURDOCH:
W-internal (quota of 40 places)

Environmental Management and Sustainability Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO393 Tropical Marine Biology - 3 points
MURDOCH:
W-internal (quota of 40 places)

MAS182 Applied Mathematics - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

MAS353 Statistical Design and Data Analysis - 3 points
MURDOCH: S2-internal, S2-external

ENV332 Managing Wetlands and Water - 3 points
MURDOCH: S2-internal, S2-external

ENG341 Water Conservation and Auditing - 3 points
MURDOCH: S1-internal, S1-external

COM103 Foundations of Communication - 3 points
MURDOCH: S2-internal, S2-external

BIO257 Australian Biodiversity - 3 points
MURDOCH: S2-internal

SUS305 Economics of Sustainability - 3 points
MURDOCH: W-internal, W-external

COD302 Creative Ways to Work with Community - 3 points
MURDOCH: S2-internal, S2-external

ENV241 Ecology - 3 points
MURDOCH: S2-internal, S2-external

Environmental Science Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

ENV303 GIS for Environmental Management and Planning - 3
points
MURDOCH:
S2-internal (quota of 70 places), S2-external (quota of 20
places)

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO393 Tropical Marine Biology - 3 points
MURDOCH:
W-internal (quota of 40 places)

ENV334 Environmental Restoration - 3 points
MURDOCH:
S1-internal (quota of 60 places), S1-external (quota of 60
places)

ENG341 Water Conservation and Auditing - 3 points
MURDOCH: S1-internal, S1-external

COM103 Foundations of Communication - 3 points
MURDOCH: S2-internal, S2-external

BIO257 Australian Biodiversity - 3 points
MURDOCH: S2-internal

MAS182 Applied Mathematics - 3 points
MURDOCH: S1-internal, S1-external, S2-internal, S2-external

Marine Science Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

ENV303 GIS for Environmental Management and Planning - 3
points
MURDOCH:
S2-internal (quota of 70 places), S2-external (quota of 20
places)

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

ENV241 Ecology - 3 points
MURDOCH: S2-internal, S2-external

BIO393 Tropical Marine Biology - 3 points
MURDOCH:
W-internal (quota of 40 places)

Biomedical Science Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

BIO367 Forensic Toxicology - 3 points
MURDOCH: S2-internal

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BMS218 Haematology - 3 points
MURDOCH:
S2-internal (quota of 80 places)

BMS323 Clinical Biochemistry I - 3 points
MURDOCH:
S2-internal (quota of 25 places)

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

BMS317 Human Pharmacology - 3 points
MURDOCH: S1-internal

Clinical Laboratory Science Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO394 Genetic Engineering - 3 points
MURDOCH: S1-internal

BIO367 Forensic Toxicology - 3 points
MURDOCH: S2-internal

BIO246 Microbiology - 3 points

MURDOCH: S1-internal

BIO388 Forensic Science and Miscarriages of Justice - 3 points

MURDOCH: W-internal

BMS317 Human Pharmacology - 3 points

MURDOCH: S1-internal

Forensic Biology and Toxicology Major

BSC200 Research in the Physical and Life Sciences - 3 points

Not available this year

MAS223 Applied Statistics - 3 points

MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points

MURDOCH: S1-internal, S1-external

BIO388 Forensic Science and Miscarriages of Justice - 3 points

MURDOCH: W-internal

BIO394 Genetic Engineering - 3 points

MURDOCH: S1-internal

BMS218 Haematology - 3 points

MURDOCH:
S2-internal (quota of 80 places)

BMS323 Clinical Biochemistry I - 3 points

MURDOCH:
S2-internal (quota of 25 places)

BMS317 Human Pharmacology - 3 points

MURDOCH: S1-internal

Genetics and Molecular Biology Major

MAS223 Applied Statistics - 3 points

MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points

MURDOCH: S1-internal, S1-external

BIO388 Forensic Science and Miscarriages of Justice - 3 points

MURDOCH: W-internal

BMS211 Medical Immunology and Molecular Genetics - 3 points

MURDOCH: S2-internal

BMS327 Diagnostic Genomics - 3 points

MURDOCH:
S1-internal (quota of 30 places), S2-internal (quota of 30
places)

BIO367 Forensic Toxicology - 3 points

MURDOCH: S2-internal

BIO359 Forensic DNA Analysis - 3 points

MURDOCH: S1-internal

BMS218 Haematology - 3 points

MURDOCH:
S2-internal (quota of 80 places)

BMS323 Clinical Biochemistry I - 3 points

MURDOCH:
S2-internal (quota of 25 places)

BMS317 Human Pharmacology - 3 points

MURDOCH: S1-internal

Chemistry Major

MAS221 Mathematical Modelling - 3 points

MURDOCH: S2-internal, S2-external

CHE309 Advanced Projects in Chemistry and Mineral Science - 3
points

MURDOCH: S1-internal, S2-internal, SUM-internal

BSC304 Innovation and Ethics in Science - 3 points

MURDOCH: S1-internal, S1-external

Physics and Nanotechnology Major

MAS223 Applied Statistics - 3 points

MURDOCH: S2-internal, S2-external

MAS222 Probability and Statistical Inference - 3 points

MURDOCH: S1-internal, S1-external

ICT289 Computer Graphics Principles and Programming - 3 points

MURDOCH: S1-internal, S1-external

ICT283 Data Structures and Abstractions - 3 points

MURDOCH: S1-internal, S1-external

ENG297 Circuits and Systems II - 3 points

MURDOCH: S2-internal

ENG207 Principles of Electronic Instrumentation - 3 points

MURDOCH: S2-internal

ICT319 Intelligent Systems - 3 points

MURDOCH: S2-internal, S2-external

MAS221 Mathematical Modelling - 3 points

MURDOCH: S2-internal, S2-external

MAS351 Environmental and Biological Modelling - 3 points

MURDOCH: S1-internal, S1-external

MAS354 Modelling and Simulation - 3 points

MURDOCH: S2-internal, S2-external

BSC304 Innovation and Ethics in Science - 3 points

MURDOCH: S1-internal, S1-external

Mathematics and Statistics Major

MAS220 Mathematical Methods - 3 points

MURDOCH: S1-internal, S1-external

MAS222 Probability and Statistical Inference - 3 points

MURDOCH: S1-internal, S1-external

ICT283 Data Structures and Abstractions - 3 points

MURDOCH: S1-internal, S1-external

MAS351 Environmental and Biological Modelling - 3 points

MURDOCH: S1-internal, S1-external

MAS352 Time Series Analysis - 3 points

MURDOCH: S1-internal, S1-external

ICT373 Software Architectures - 3 points

MURDOCH: S1-internal, S1-external

ICT374 Operating Systems and Systems Programming - 3 points

MURDOCH: S2-internal, S2-external

Engineering Technology Major

MAS221 Mathematical Modelling - 3 points

MURDOCH: S2-internal, S2-external

The following unit is no longer available - contact the Academic
Chair for advice:

BEN200 Scientific Method in Engineering - 3 points

MAS223 Applied Statistics - 3 points

MURDOCH: S2-internal, S2-external

BEN300 Innovation and Ethics in Engineering - 3 points

MURDOCH: S1-internal

BSC304 Innovation and Ethics in Science - 3 points

MURDOCH: S1-internal, S1-external

MAS351 Environmental and Biological Modelling - 3 points

MURDOCH: S1-internal, S1-external

MAS354 Modelling and Simulation - 3 points

MURDOCH: S2-internal, S2-external

ENG336 Engineering Finance, Management and Law - 3 points

MURDOCH: S2-internal

Mineral Science Major

ENG255 Chemical Process Kinetics - 3 points
MURDOCH: S1-internal, S1-external

MAS221 Mathematical Modelling - 3 points
MURDOCH: S2-internal, S2-external

The following unit is no longer available - contact the Academic Chair for advice:

BEN200 Scientific Method in Engineering - 3 points

ENG299 Control Systems and Process Dynamics - 3 points
MURDOCH: S1-internal

BEN300 Innovation and Ethics in Engineering - 3 points
MURDOCH: S1-internal

MAS351 Environmental and Biological Modelling - 3 points
MURDOCH: S1-internal, S1-external

MAS354 Modelling and Simulation - 3 points
MURDOCH: S2-internal, S2-external

ENG336 Engineering Finance, Management and Law - 3 points
MURDOCH: S2-internal

Marine Biology Major

BSC200 Research in the Physical and Life Sciences - 3 points
Not available this year

ENV303 GIS for Environmental Management and Planning - 3 points
MURDOCH: S2-internal (quota of 70 places), S2-external (quota of 20 places)

BIO246 Microbiology - 3 points
MURDOCH: S1-internal

BMS316 Parasitology: People, Pets and Wildlife - 3 points
MURDOCH: S2-internal

MAS223 Applied Statistics - 3 points
MURDOCH: S2-internal, S2-external

MAS224 Biostatistical Methods - 3 points
MURDOCH: S1-internal, S1-external

BIO282 Molecular Biology - 3 points
MURDOCH: S1-internal

PREREQUISITES

Advanced Process and Instrumentation Engineering (ENG308)

ENG298/ENG241 Principles of Process Engineering; ENG294 Discrete Time Systems and ENG299/ENG267 Control Systems and Process Dynamics.

Advanced Projects in Chemistry and Mineral Science (CHE309)

Students need to have completed a minimum of 24 points at 200 and 300 level.

Advanced Quantitative Research Methods (BSC302)

BSC201 Psychology: Measurement, Design and Analysis OR PSY212: Psychology: Measurement, Design and Analysis.

Applied Mathematics (MAS182)

MAS164 Fundamentals of Mathematics OR at least a pass in the Year 11 course Introduction to Calculus together with a final scaled score of 55% or more in TEE Applicable Mathematics OR a final scaled score of 55% or higher in ATAR Mathematics Methods (WACE Mathematics 3C/3D).

Applied Photovoltaics (ENG337)

Completion of second year engineering; ENG297 Circuits and

Systems II; ENG207 Principles of Electronic Instrumentation.

Applied Statistics (MAS223)

MAS183 Statistical Data Analysis.

Australian Biodiversity (BIO257)

Nil.

Biochemistry (BIO247)

BIO152 Cell Biology/Foundations of Cell and Molecular Biology/Foundations of Cell Biology

Biostatistical Methods (MAS224)

MAS180 Introduction to Statistics or MAS183 Statistical Data Analysis.

Building Blocks for Science Students (BSC100)

Enrolment in a Bachelor of Science, Bachelor of Animal Science, Bachelor of Environmental Management, Bachelor of Environmental Science, Bachelor of Extractive Metallurgy, Bachelor of Forensics, Bachelor of Marine Science, Bachelor of Sports Science, Bachelor of Technology in Engineering Technology, Bachelor of Sustainability, Bachelor Of Sport And Exercise Science, Bachelor of Sport and Exercise Science + Psychology (BSportExSc, BSc) or Bachelor Of Sport And Exercise Science/Graduate Diploma In Clinical Exercise Physiology, or B1355 Bachelor of Laws / Bachelor of Science (Psychology), or B1338 BA Psychology, B1388 BA Psychology, or B1347 Bachelor of Criminology + BA Psychology, or B1354 Bachelor of Law + Bachelor of Arts Psychology, or Bachelor of Science (Agricultural Sciences), or Bachelor of Agricultural Science + Commerce, or Bachelor of Laboratory Medicine, or Bachelor of Science (Medical, Molecular and Forensic Sciences), or Bachelor of Food Science and Nutrition.

Career Learning: Managing Your Career (MSP100)

Nil.

Chemical Analysis (CHE207)

CHE144 Foundations of Chemistry/PEC144 Chemical Principles.

Chemical Process Kinetics (ENG255)

All Part I units in the Chemical and Metallurgical Engineering Honours major.

Circuits and Systems I (ENG225)

Corequisite: MAS182 Applied Mathematics or MAS161 Calculus and Matrix Algebra.

Circuits and Systems II (ENG297)

ENG225 Circuits and Systems I AND MAS182 Applied Mathematics or equivalent.

Clinical Biochemistry I (BMS323)

BIO247 Biochemistry

Computer Graphics Principles and Programming (ICT289)

ICT167 Principles of Computer Science OR ICT104 Principles of Computer Science. Students are encouraged to also complete MAS162 Foundations of Discrete Mathematics AND ICT170 Foundations of Computer Systems.

Control Systems and Process Dynamics (ENG299)

PEC152/PEN152 Principles of Physics; MAS161 Calculus and Matrix Algebra or co-requisite MAS208 Mathematical Modelling; ENG109 Computing for Scientists and Engineers; ENG192 Energy, Mass and Flow or CHE144 Foundations of Chemistry.

Creative Ways to Work with Community (COD302)

Nil.

Data Structures and Abstractions (ICT283)

ICT167/ICT104 Principles of Computer Science. Students are encouraged to also complete MAS162 Foundations of Discrete Mathematics AND ICT170 Foundations of Computer Systems.

Diagnostic Genomics (BMS327)

BIO282 Molecular Biology

Discrete Time Systems (ENG294)

PEC152/PEN152 Principles of Physics; MAS161 Calculus and Matrix Algebra or co-requisite MAS208 Mathematical Modelling; ENG109 Computing for Scientists and Engineers; ENG192 Energy, Mass and Flow; ENG297 Circuit and Systems II or co-requisite ENG207 Principles of Electronics Instrumentation.
Recommended co-requisite: ENG299 Control Systems and Process Dynamics.

Ecology (ENV241)

BIO103 Environmental Biology/Introduction to Environmental Biology or BIO180 Introduction to Marine Biology.

Economics of Sustainability (SUS305)

Nil.

Electromechanical Energy Conversion (ENG317)

ENG243/ENG297 Circuits and Systems II.

Energy Supply and Management (ENG338)

PEN120 General Physics/PEN152 Principles of Physics and BEN100 Transitioning into Engineering.

Energy, Mass and Flow (ENG192)

Completion of, or concurrent enrolment in, MAS182 Applied Mathematics or MAS161 Calculus and Matrix Algebra; plus a final scaled score of 60% or more in WACE Physics 3A/3B or a pass in PEC120/PEN120 General Physics.

Engineering Finance, Management and Law (ENG336)

Nil.

Environmental Policy and Law (ENV328)

Nil.

Environmental Restoration (ENV334)

BIO103 Environmental Biology/Introduction to Environmental Biology. Students are strongly recommended to complete ENV268/ENV241 Ecology.

Environmental and Biological Modelling (MAS351)

MAS221/MAS208 Mathematical Modelling OR MAS220/MAS261 Mathematical Methods.

Forensic DNA Analysis (BIO359)

BIO202 Molecular Biology I or BIO212 Genetic Engineering or BIO282 Molecular Biology

Forensic Science and Miscarriages of Justice (BIO388)

PEC103/CHE103 Introduction to Forensic Science OR CRM100 Introduction to Criminology OR permission of the Unit Co-ordinator.

Forensic Toxicology (BIO367)

Successful completion of, or concurrent enrolment in, either BIO247/BIO270 Biochemistry/Biochemistry I or BMS261/VET272 Human and Comparative Biochemistry/Comparative Mammalian Biochemistry or CHE207 Chemical Analysis..

Foundations of Communication (COM103)

Nil.

Fundamentals of Mathematics (MAS164)

Nil.

GIS for Environmental Management and Planning (ENV303)

Completion of 24 points or enrolment in an appropriate graduate qualification.

General Physics (PEN120)

Mathematics 3C/3D or MAS164 Fundamentals of Mathematics are strongly recommended. MAS164 Fundamentals of Mathematics may be taken concurrently.

Genetic Engineering (BIO394)

BIO282 Molecular Biology

Haematology (BMS218)

BIO152 Cell Biology/Foundations of Cell and Molecular Biology/Foundations of Cell Biology.

Human Pharmacology (BMS317)

Essential: BIO247 Biochemistry or BMS206 Biomedical Physiology OR VET272 Comparative Mammalian Biochemistry.
Recommended: BRD202 Drugs in Society

Innovation and Ethics in Engineering (BEN300)

BEN200 Engineering Research Skills; MAS261/MAS220 Mathematical Methods OR MAS208/MAS221 Mathematical Modelling.

Innovation and Ethics in Science (BSC304)

Completion of one 200-level research skills unit recommended for your major.

Instrument and Communication Systems (ENG321)

ENG207 Principles of Electronic Instrumentation; ENG294 Discrete Time Systems.

Intelligent Systems (ICT319)

ICT167 Principles of Computer Science OR ICT104 Principles of Computer Science.

Introduction to Research Methodology and Evidence Based Practice (BSC206)

100-level Transition Unit.

Managing Wetlands and Water (ENV332)

ENV241/ENV268 Ecology

Marine Ecology (BIO377)

BIO261/BIO244 Animal Diversity/Animal Speciation, Radiation, Evolution, or BIO287 Plant Diversity (Marine Science) / BIO254 Marine Botany or BIO265/BIO245 Plant Diversity/Plant Evolution, Radiation and Adaptation, or ENV268/ENV241 Ecology.

Mathematical Methods (MAS220)

MAS161 Calculus and Matrix Algebra OR MAS208/MAS221 Mathematical Modelling OR equivalent.

Mathematical Modelling (MAS221)

MAS182 Applied Mathematics or MAS161 Calculus and Matrix Algebra or equivalent.

Medical Immunology and Molecular Genetics (BMS211)

BIO152 Cell Biology/ Foundations of Cell and Molecular Biology.

Microbiology (BIO246)

BIO152 Cell Biology/Foundations of Cell and Molecular Biology/Foundations of Cell Biology

Modelling and Simulation (MAS354)

MAS161 Calculus and Matrix Algebra OR MAS221/MAS208 Mathematical Modelling OR both MAS182 Applied Mathematics AND MAS167 Computational Mathematics/MAS162 Foundations of Discrete Mathematics

Molecular Biology (BIO282)

BIO152 Cell Biology/Foundations of Cell and Molecular Biology/Foundations of Cell Biology

Operating Systems and Systems Programming (ICT374)

ICT283/ICT209 Data Structures and Abstractions.

PLC Systems (ENG311)

ENG109 Computing for Scientists and Engineers; ENG207/ENG262 Principles of Electronic Instrumentation; ENG294 Discrete Time Systems or ENG267 Process Dynamics and Control Systems.

Parasitology: People, Pets and Wildlife (BMS316)

BIO152 Cell Biology/Foundations of Cell and Molecular Biology/Foundations of Cell Biology

Power Electronic Converters and Systems (ENG318)

ENG297/243 Circuits and Systems II AND ENG207/262 Principles of Electronic Instrumentation.

Power Transmission and Distribution Networks (ENG323)

ENG297/ENG243 Circuits and Systems II; MAS220/MAS261 Mathematical Methods or MAS221/MAS208 Mathematical Modelling.

Principles of Electronic Instrumentation (ENG207)

ENG225 Circuits and Systems I and MAS182 Applied Mathematics.

Principles of Process Engineering (ENG298)

MAS182 Applied Mathematics or MAS161 Calculus and Matrix Algebra; CHE140/PEC140 Introduction to Chemistry or CHE144/PEC144 Chemical Principles or ENG192 Energy, Mass and Flow.

Probability and Statistical Inference (MAS222)

MAS180 Introduction to Statistics OR MAS183 Statistical Data Analysis OR MAS223 Applied Statistics OR MAS224/MAS230 Biostatistical Methods OR MAS284 Applied Statistics and Process Management. In addition, students must have a calculus background equivalent to at least MAS182 Applied Mathematics.

Process Control Engineering I (ENG309)

ENG294 Discrete Time Systems and ENG299 Control Systems and Process Dynamics or ENG267 Control Systems and Process Dynamics;
ENG298 or ENG241 Principles of Process Engineering.

Process Control Engineering II (ENG322)

ENG298/ENG241 Principles of Process Engineering; ENG294 Discrete Time Systems and ENG299/ENG267 Control System and Process Dynamics.

Psychology: Measurement, Design and Analysis (BSC201)

PSY173 Introduction to Psychological Research Methods

Real Time and Embedded Systems (ENG319)

ENG109 Computing for Scientists and Engineers; ENG207/ENG262 Principles of Electronic Instrumentation; ENG294 Discrete Time Systems or ENG267 Process Dynamics and Control Systems.

Research and Evidence Based Practice (BSC306)

Completion of BSC206 Introduction to Research Methodology and Evidence Based Practice or special permission of Unit Coordinator.

Research in the Physical and Life Sciences (BSC200)

BSC100 Building Blocks for Science Students; OR enrolment in B1329 Bachelor of Education/Bachelor of Science and BED100 Ideas in Education.

Software Architectures (ICT373)

ICT104 Principles of Computer Science OR ICT167 Principles of Computer Science; ICT231 Systems Analysis and Design OR ICT284 Systems Analysis and Design.

Statistical Design and Data Analysis (MAS353)

MAS222/MAS278 Probability and Statistical Inference OR MAS223 Applied Statistics OR MAS224/MAS230 Biostatistical Methods OR MAS284 Applied Statistics and Process Management.

Time Series Analysis (MAS352)

MAS222/MAS278 Probability and Statistical Inference OR MAS223 Applied Statistics OR MAS224/MAS230 Biostatistical Methods OR MAS284 Applied Statistics and Process Management or enrolment in a postgraduate IT course. In addition students must have a calculus background equivalent to at least either MAS161 Calculus and Matrix Algebra OR MAS221/MAS208 Mathematical Modelling.

Tropical Marine Biology (BIO393)

BIO261/BIO244 Animal Diversity/Animal Speciation, Radiation, Evolution OR BIO265/BIO245 Plant Diversity/Plant Evolution, Radiation and Adaptation OR BIO287/BIO254 Plant Diversity (Marine Science) /Marine Botany OR ENV268/ENV241 Ecology OR permission of the Unit Coordinator.

Water Conservation and Auditing (ENG341)

Nil.

Wind and Hydro Power Systems (ENG339)

PEN120 General Physics or PEN152 Principles of Physics and BEN100 Transitioning into Engineering and ENG297 Circuits and Systems II.

Personal Study Plan

Unit Sets:

Year	Semester 1	Semester 2
1		
2		
3		
4		