

# STUDY PLAN - BACHELOR OF SCIENCE

Version 4 - For student admitted in before SP5/22

\*Students who have not completed high school Mathematical Methods or equivalent must enrol in MA1020 Preparatory Maths as an elective level 1 subject at Term 1

## COURSE STRUCTURE FOR BSCI (AQUACULTURE & TECHNOLOGY MAJOR)



## COURSE STRUCTURE FOR BSCI (DATA SCIENCE MAJOR)



## COURSE STRUCTURE FOR BSCI (INTERNET OF THINGS MAJOR)



**Important Note:**  
Students must successfully complete 18 credit points of Level 1 and 2 science subjects before attempting any Level 3 science subject.

## 6 GENERAL CORE SUBJECTS For All Majors

Subject Code	Subject Name	Pre-requisites	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
SC1101	Science, Technology and Truth		✓	✓	✓	✓	✓	✓
SC1102	Modelling Natural Systems	MA1020/Senior Maths or equivalent.	✓	✓	✓	✓	✓	✓
SC2202	Quantitative Methods in Science	SC1102 OR Students from BBusEnvSc Program (Assume Knowledge: Good understanding of Level 1 science, including at least 2 Level 1 subjects)	✓	✓	✓	✓	✓	✓
SC3008	Professional Placement	Offered every term. Completed 4 second year sub-a & enrolled in BSCI final year. To apply for this subject student need to apply to Careers Office at least 1 term ahead (careers-singapore@jcu.edu.au). To extend 1 trimester of studies so Professional Placement is the last subject remaining	✓	✓	✓	✓	✓	✓
SC3901	Special Topic 1	Offered every term. To request enrolment in this subject student's should (1) obtain approval from a research supervisor (usually an academic or research staff member in the College), (2) identify a project in consultation with the supervisor, and (3) email confirmation from supervisor and a brief description of the project to the subject coordinator.	✓	✓	✓	✓	✓	✓

## 18 SUBJECTS FOR Aquaculture Science & Technology Major

Subject Code	Subject Name	Pre-requisite	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
BS1001	Introduction to Biological Processes	(Assumed Knowledge: Good understanding of English to Grade 12 or equivalent.)	✓	✓	✓	✓	✓	✓
BS1007	Introduction to Biodiversity	(Assumed Knowledge: Good understanding of English to Grade 12 (Queensland) or equivalent)	✓	✓	✓	✓	✓	✓
BS2470	Evolution	(Assumed Knowledge: Have completed 12 credit points of level 1 science subjects, have an understanding of the fundamentals of biology (BS1001 or equivalent).)	✓	✓	✓	✓	✓	✓
M2031	Diagnosis of Bacterial Diseases in Aquaculture		✓	✓	✓	✓	✓	✓
AQ2001	Introduction to Aquaculture	4 Level 1 Science subjects (Assumed Knowledge: Good understanding of level 1 biology, particularly zoology. A basic understanding of chemistry and statistics is highly recommended.)	✓	✓	✓	✓	✓	✓
AQ3002	Aquaculture: Feeds and Nutrition	4 of Level 2 AQ, BC, BZ, BS, CH, EA, EV, MA, MB or PH science subjects and 1 of level 2 aquaculture subjects.	✓	✓	✓	✓	✓	✓
AQ3003	Aquaculture: Propagation	AQ2001 and at least 4 subjects of Level 2 science subjects (Assumed Knowledge: Good understanding of basic biology and aquaculture principles.)	✓	✓	✓	✓	✓	✓
AQ3004	Aquaculture: Stock Improvement	At least 4 subjects of Level 2 science subjects and 1 subject of level 2 aquaculture subjects. (Assumed Knowledge: Good understanding of basic biology, physiology, genetics and aquaculture, and should have completed SC2202/SC2209 AND AQ2001 or equivalent.)	✓	✓	✓	✓	✓	✓
AQ3015	Sustainable Aquaculture	4 Level 2 subjects	✓	✓	✓	✓	✓	✓
Plus 2 breadth subjects from List 1								
Select any 2 subjects (except BS1001 & BS1007) from Breadth Subjects in List 1 - List of Breadth Subjects at Appendix								
Plus 8 elective subjects								
Select 3 subjects from any Level 2, 3 or 5 Science subjects (See List of Science Subjects Level 2, 3, 5 at Appendix)								
Select 1 subject from any Level 3 or 5 Science subjects (See List of Science Subjects Level 3, 5 at Appendix)								
Select 2 subjects from any Level 1, 2, 3 or 5 subjects- can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement. Students who have not completed high school Mathematical Methods or equivalent must enrol in MA1020 Preparatory Maths as an elective Level 1 subject at Term 1.								
Select 2 subjects from any Level 2,3 or Level 5 subjects-can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement								

## 18 SUBJECTS FOR Data Science Major

Subject Code	Subject Name	Pre-requisite	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
MA1580	Foundations of Data Science	MA1000 or MA1020 or Maths B	✓	✓	✓	✓	✓	✓
MA1000	Mathematical Foundations	MA1020 OR Maths B OR Maths C	✓	✓	✓	✓	✓	✓
CP1404	Programming II	CP1401	✓	✓	✓	✓	✓	✓
MA2405	Advanced Statistical Modelling	SC2202 AND MA1000	✓	✓	✓	✓	✓	✓
MA3405	Statistical Data Mining for Big Data	MA2405 or MA2000 or SC2202	✓	✓	✓	✓	✓	✓
MA3831	Natural Language Processing, Web Scraping and Large Data Processing	CP1404 and MA3405	✓	✓	✓	✓	✓	✓
MA3832	Neural Network and Deep Learning	MA3405 and CP1404	✓	✓	✓	✓	✓	✓
MA3212	Optimisation and Operations Research	MA2000 and MA2210	✓	✓	✓	✓	✓	✓
Plus 2 subjects from below list (Don't select CP2404 and/or MA2210 if they are already taken in Skill Subjects List).								
CP2404	Database Modelling		✓	✓	✓	✓	✓	✓
MA2210	Linear Algebra	MA1003. Recommended to complete MA2000.	✓	✓	✓	✓	✓	✓
MA2211	Discrete Mathematics	Maths B or MA1020	✓	✓	✓	✓	✓	✓
MA2630	Data Visualisation		✓	✓	✓	✓	✓	✓
CP1401	Problem Solving and Programming I		✓	✓	✓	✓	✓	✓
MA1000	Mathematical Foundations	MA1020 OR Maths B OR Maths C	✓	✓	✓	✓	✓	✓
CP1404	Programming II	CP1401	✓	✓	✓	✓	✓	✓
Plus 8 elective subjects								
Select 3 subjects from any Level 2, 3 or 5 Science subjects (See List of Science Subjects Level 2, 3, 5 at Appendix)								
Select 1 subject from any Level 3 or 5 Science subjects (See List of Science Subjects Level 3, 5 at Appendix)								
Select 2 subjects from any Level 1, 2, 3 or 5 subjects- can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement.								
Note 1: Students who have not completed high school Mathematical Methods or equivalent must enrol in MA1020 Preparatory Maths as an elective level 1 subject at Term 1.								
Note 2: Note: Student must select MA1003 as an elective level 1 in this option line if you wish to study MA2000, MA2210 & MA3212 (Student must meet pre-req of MA2000 & MA2210 before studying MA3212).								
Select 2 subjects from any Level 2,3 or Level 5 subjects-can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement								

## 18 SUBJECTS FOR Internet of Things Major (IOT)

Subject Code	Subject Name	Pre-requisite	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
EG1012	Electric Circuits	Assumed Knowledge: This subject requires prior knowledge of Senior Mathematics B or MA1020 (or equivalent) OR Senior Mathematics C.	✓	✓	✓	✓	✓	✓
CC1003	Introduction to Microcontroller Programming		✓	✓	✓	✓	✓	✓
CC2003	Internet of Things Devices and Software	CC1003 and EG1012	✓	✓	✓	✓	✓	✓
EE2201	Circuit Theory	EG1012 & MA2000. Allow concurrent enrolment for MA2000.	✓	✓	✓	✓	✓	✓
CC3003	Internet of Things Systems and Security	CC2003	✓	✓	✓	✓	✓	✓
EE3901	Sensor Technologies	EE2201 and CC2003	✓	✓	✓	✓	✓	✓
MA2405	Advanced Statistical Modelling	SC2202 AND MA1000	✓	✓	✓	✓	✓	✓
MA3405	Statistical Data Mining for Big Data	MA2405 or MA2000 or SC2202	✓	✓	✓	✓	✓	✓
Plus 2 breadth subjects-List 1								
Select 2 subjects of Breadth Subjects-List 1 (See List of Breadth Subjects at Appendix)								
*Students admitted before SP5/22 in IOT major must Not select MA1000 & MA1003 in List 1 of Breadth Subjects.								
*Students admitted in SP5/22 must take MA1000 & MA1003 so you can take MA2000 then core subject EE2201 later on								
MA1000	Mathematical Foundations	MA1020 OR Maths B OR Maths C	✓	✓	✓	✓	✓	✓
MA1003	Mathematical Techniques	MA1000	✓	✓	✓	✓	✓	✓
MA2000	Mathematics for Scientists and Engineers	MA1003	✓	✓	✓	✓	✓	✓
MA2210	Linear Algebra	MA1003. Recommended to complete MA2000.	✓	✓	✓	✓	✓	✓
Select 1 subjects from any Level 3 or 5 Science subjects (See List of Science Subjects Level 3, 5 at Appendix)								
Select 1 subjects from any Level 1, 2, 3 or 5 subjects- can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement. Students who have not completed high school Mathematical Methods or equivalent must enrol in MA1020 Preparatory Maths as an elective level 1 subject at Term 1.								
Select 2 subjects from any Level 2,3 or Level 5 subjects-can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement								
Select 3 subjects from any Level 2, 3 or 5 Science subjects (See List of Science Subjects Level 2, 3, 5 at Appendix)								
Select 1 subjects from any Level 3 or 5 Science subjects (See List of Science Subjects Level 3, 5 at Appendix)								
Select 2 subjects from any Level 1, 2, 3 or 5 subjects- can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement. Students who have not completed high school Mathematical Methods or equivalent must enrol in MA1020 Preparatory Maths as an elective level 1 subject at Term 1.								
Select 2 subjects from any Level 2,3 or Level 5 subjects-can choose from other majors or refer to Study Plan of other undergraduate program e.g. Business, Arts, Psychology- make sure you meet pre-requisite requirement								

Note: Changes that are recently made will be highlighted in yellow and/or red fonts.

Disclaimer: The above information is correct as below date. Due to unforeseen situations, there might be change done in subject offerings before each trimester. Your understanding is greatly appreciated.



## APPENDIX

### 1/. LIST 1 OF BREADTH SUBJECTS

Reminder:  
1/. All students must select 2 subjects from this list.  
- For IOT major: students admitted before SP5/22 must select any 2 subjects from this list except MA1000 & MA1003 which are already core of your major; students admitted in SP5/22 must select MA1000 & MA1003.  
- For Data Science major: students must select CP1401 & CP1404 or MA1000.  
- For Aquaculture & Technology major: students must not select BS1001 & BS1007.

Subject Code	Subject Name	Pre-requisites	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
BS1001	Introduction to Biological Processes	(Assumed Knowledge: Good understanding of English to Grade 12 or equivalent.)	✓	✓	✓	✓	✓	✓
BS1007	Introduction to Biodiversity	(Assumed Knowledge: Good understanding of English to Grade 12 (Queensland) or equivalent)	✓	✓	✓	✓	✓	✓
CP1401	Problem Solving and Programming I		✓	✓	✓	✓	✓	✓
CP1404	Programming II	CP1401	✓	✓	✓	✓	✓	✓
EA1110	Evolution of the Earth		✓	✓	✓	✓	✓	✓
EV1005	Environmental Processes and Global Change		✓	✓	✓	✓	✓	✓
MA1000	Mathematical Foundations	MA1020 OR Maths B OR Maths C	✓	✓	✓	✓	✓	✓
MA1003	Mathematical Techniques	MA1000	✓	✓	✓	✓	✓	✓

### 2/. LIST 2 OF SKILL SUBJECTS

Reminder: All students must select 2 subjects from this list.

Subject Code	Subject Name	Pre-requisite	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
CP2404	Database Modelling		✓	✓	✓	✓	✓	✓
EV2502	Introduction to Geographic Information Systems	4 level 1 subjects	✓	✓	✓	✓	✓	✓
MA2000	Mathematics for Scientists and Engineers	MA1003	✓	✓	✓	✓	✓	✓
MA2210	Linear Algebra	MA1003. Recommended to complete MA2000.	✓	✓	✓	✓	✓	✓
MA2630	Data Visualisation		✓	✓	✓	✓	✓	✓

### 3/. LIST OF SCIENCE SUBJECTS LEVEL 2,3,5

Subject Code	Subject Name	Pre-requisite	Year 2024			Year 2025		
			SP51	TR2	TR3	TR1S	TR2	TR3
AQ2001	Introduction to Aquaculture	4 Level 1 Science subjects (Assumed Knowledge: Good understanding of level 1 biology, particularly zoology. A basic understanding of chemistry and statistics is highly recommended)	✓	✓	✓	✓	✓	✓
AQ2002	Aquaculture of Tropical Species	4 Level 1 Science subjects (Assumed Knowledge: Good understanding of basic biology)	✓	✓	✓	✓	✓	✓
AQ3002	Aquaculture: Feeds and Nutrition	4 of Level 2 AQ, BC, BZ, BS, CH, EA, EV, MA, MB or PH science subjects and 1 of level 2 aquaculture subjects.	✓	✓	✓	✓	✓	✓
AQ3003	Aquaculture: Propagation	AQ2001 and at least 4 subjects of Level 2 science subjects. (Assumed Knowledge: Good understanding of basic biology and aquaculture principles.)	✓	✓	✓	✓	✓	✓
AQ3004	Aquaculture: Stock Improvement	At least 4 subjects of Level 2 science subjects and 1 subject of level 2 aquaculture subjects. (Assumed Knowledge: Good understanding of basic biology, physiology, genetics and aquaculture, and should have completed SC2202/SC2209 AND AQ2001 or equivalent.)	✓	✓	✓	✓	✓	✓
AQ3015	Sustainable Aquaculture	4 Level 2 subjects	✓	✓	✓	✓	✓	✓
BS2460	Fundamentals of Ecology	2 Level 1 or 2 BZ/BS/EA/MA/MB/PH science subjects (Assumed Knowledge: Good understanding of level 1 biology or environmental science and are also recommended to have completed some introductory statistics prior to enrolling)	✓	✓	✓	✓	✓	✓
BS2470	Evolution	(Assumed Knowledge: Have completed 12 credit points of level 1 science subjects. Have an understanding of the fundamentals of biology.)	✓	✓	✓	✓	✓	✓
CP2403	Information Processing and Visualisation	Minimum 12 credit points of subjects. (Inadmissible with CP3413)	✓	✓	✓	✓	✓	✓
CP2404	Database Modelling		✓	✓	✓	✓	✓	✓
CP2405	Collective Intelligence and Entrepreneurship	Minimum 24 credit points.	✓	✓	✓	✓	✓	✓
CP2406	Programming III	CP1404	✓	✓	✓	✓	✓	✓
CP2408	Design Thinking II	CP1403	✓	✓	✓	✓	✓	✓
CP2409	Network Forensics and Data Communications	CP1402	✓	✓	✓	✓	✓	✓
CP2410	Algorithms and Data Structures	6 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP2411	3D Modelling and Animation	6 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP2412	Game Design and Technologies	6 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP2414	Network Security	For BBus Student: 3 credit points of CP subjects. For Student in other Program CP1402	✓	✓	✓	✓	✓	✓
CP2421	Machine Learning for Cybersecurity	CP1401 and MA1580	✓	✓	✓	✓	✓	✓
CP2422	Cloud and Data Centre Security	CP1401	✓	✓	✓	✓	✓	✓
CP2423	Cybersecurity Infrastructure and Management	CP1401 and CP1410	✓	✓	✓	✓	✓	✓
CP2424	Cybersecurity Risk Management	12 credit points of CP subjects including CP1410	✓	✓	✓	✓	✓	✓
CP3401	e-Strategic Management	Minimum of 24 credit points	✓	✓	✓	✓	✓	✓
CP3402	Content Management Systems	CP1404 and CP1406 and 24 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP3403	Data Mining	(CP2403 and CP2404) or (18 credit points of subjects including 6 credit points of CP subjects). Inadmissible Subject: CP3534	✓	✓	✓	✓	✓	✓
CP3404	Information Security	(CP2414) or (18 credit points of subjects including CP1402)	✓	✓	✓	✓	✓	✓
CP3405	Design Thinking III	CP2408	✓	✓	✓	✓	✓	✓
CP3406	Mobile Computing	CP1404 and 18 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP3407	Advanced Software Engineering	CP1404 and 18 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP3408	Game Engine and Simulation	CP1404 and 18 credit points of CP subjects	✓	✓	✓	✓	✓	✓
CP3413	Information Processing and Visualisation	12 credit points of BUBX subjects (inadmissible with CP2403)	✓	✓	✓	✓	✓	✓
CP3414	Ethical Hacking	CP2422, CP2423	✓	✓	✓	✓	✓	✓
CP3415	Strategy and Governance	CP2424	✓	✓	✓			