

STUDY PLAN - BACHELOR OF SCIENCE

Version 4 - For student admitted in before SP52/2022

*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 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
3 subjects Level 1 & 2	SC1101	Science, Technology And Truth	✓	✓	✓			
	SC1102	Modelling Natural Systems	✓	✓	✓			
	SC2202	Quantitative Methods In Science	✓	✓	✓			
1 subject Level 3 to be selected from here	SC3008	Professional Placement	Offered every term. Completed 4 second year subs & 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 Internship is the last subject remaining					
	SC3901	Special Topic 1	Offered every term. To request enrolment in this subject student's should (1) attain 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.					
2 Skill Subject-List 2	Select 2 Skill Subject from List 2 (Refer to Appendix List of Skill Subjects) * Student with IOT major must take MA2000 in order to meet pre-req requirement of core subject EE2201.							

18 SUBJECTS FOR Aquaculture Science & Technology Major

Subject Code	Subject Name	Pre-requisite	Year 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
8 core subjects	BS1001	Introduction To Biological Processes		✓	✓	✓		
	BS1007	Introduction To Biodiversity	✓	✓	✓			
	BS2470	Evolution	✓	✓	✓			
	MI2031	Diagnosis Of Bacterial Diseases In Aquaculture	✓	✓	✓			
	AQ2001	Introduction to Aquaculture	4 Level 1 science subjects (Subjects with Prefix: BS, BZ, CH, EA, EV, MA, MB, PH or SC)					
	AQ3002	Aquaculture: Feeds and Nutrition	4 Level 2 science subjects and 1 Level 2 aquaculture subjects. Should have completed SC2202 and AQ2001					
	AQ3003	Aquaculture: Propagation	AQ2001 AND at least 4 Level 2 science subjects (with Prefix: AQ, BC, BS, BZ, CH, EA, EV, MA, MB, PH, or SC)					
	AQ3004	Aquaculture: Stock Improvement	4 Level 2 science subjects and 1 Level 2 aquaculture subjects. Should have completed SC2202 and AQ2001					
AQ3015	Sustainable Aquaculture	4 Level 2 subjects						
Plus 2 breadth subjects from List 1	Select any 2 subjects of Breadth Subjects from List 1 except BS1001 & BS1007 (See 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 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 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
8 core subjects	MA1580	Foundations of Data Science	MA1020 or Maths B or MA1000					
	MA1000	Mathematical Foundations	✓	✓	✓	✓	✓	
	CP1404	Programming II	✓	✓	✓	✓	✓	
	MA2405	Advanced Statistical Modelling	✓	✓	✓	✓	✓	
	MA3405	Statistical Data Mining for Big Data	✓	✓	✓	✓	✓	
	MA3831	Natural Language Processing, Web Scrapping and Large Data Processing	✓	✓	✓	✓	✓	
	MA3832	Neural Network and Deep Learning	✓	✓	✓	✓	✓	
	MA3212	Optimisation and Operations Research	✓	✓	✓	✓	✓	
	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						
MA2830	Data Visualisation	✓	✓	✓	✓	✓		
Plus 2 breadth subjects	CP1401	Problem Solving And Programming I	✓	✓	✓	✓	✓	
	MA1000	Mathematical Foundations	MA1020 or MATHEMATICS B or Maths C					
	CP1404	Programming II	✓	✓	✓	✓	✓	
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 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 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
8 core subjects	EG1012	Electric Circuits		✓	✓	✓		
	CC1003	Introduction to Microcontroller Programming	✓	✓	✓	✓	✓	
	CC2003	Internet of Things Devices and Software	✓	✓	✓	✓	✓	
	EE2201	Circuit Theory	EG1012 & MA2000. Allow concurrent enrolment for MA2000.					
	CC3003	Internet of Things Systems and Security	CC2003					
	EE3901	Sensor Technologies	✓	✓	✓	✓	✓	
	MA2405	Advanced Statistical Modelling	✓	✓	✓	✓	✓	
	MA3405	Statistical Data Mining for Big Data	✓	✓	✓	✓	✓	
	Select 2 breadth subjects-List 1 (See List of Breadth Subjects at Appendix)							
	Plus MA1000 + MA1003 + MA2000 + MA2210 + 4 elective subjects (For Students admitted before SP51/22)	MA1000	Mathematical Foundations	MA1020 or MATHEMATICS B or Maths C				
MA1003		Mathematical Techniques	MA1000					
MA2000		Mathematics for Scientists and Engineers	MA1003					
MA2210		Linear Algebra	MA1003. Recommended to complete MA2000.					
Plus 8 elective subjects (For Students admitted in SP51/22 Only)	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 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 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								

Disclaimer: The above information is correct as below date. Normally there will be no changes to subject offerings which are currently planned but due to unforeseen situations there might be change done without prior notice. We seek your kind understanding and thank you in advance



APPENDIX

1/ LIST 1 OF BREADTH SUBJECTS

Reminder:

- 1/ All students must select 2 subjects from this list.
- For IOT major: students admitted before SP51/22 must select any 2 subjects from this list except MA1000 & MA1003 which are already core of your major; students admitted in SP51/22 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 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
BS1001	Introduction To Biological Processes			✓	✓	✓	✓	
BS1007	Introduction To Biodiversity		✓	✓	✓		✓	
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 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
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.		✓	✓		✓	
MA2830	Data Visualisation			✓	✓		✓	
SC3010	Sensors And Sensing For Scientists	SC2202	No longer offer					

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

Subject Code	Subject Name	Pre-requisite	Year 2023			Year 2024		
			SP51	SP52	SP53	SP51	SP52	SP53
AQ2001	Introduction to Aquaculture	4 Level 1 science subjects (Subjects with Prefix: BS, BZ, CH, EA, EV, MA, MB, PH or SC)		✓	✓		✓	
AQ2002	Aquaculture of Tropical Species	4 Level 1 science subjects (Subjects with Prefix: BS, BZ, CH, EA, EV, MA, MB, PH or SC)	✓		✓		✓	
AQ3002	Aquaculture: Feeds and Nutrition	4 Level 2 science subjects and 1 Level 2 aquaculture subjects. Should have completed SC2202 and AQ2001 or equivalent.		✓	✓		✓	
AQ3003	Aquaculture: Propagation	AQ2001 AND 4 Level 2 science AQ, BC, BS, BZ, CH, EA, EV, MA, MB, PH, or SC subjects.		✓	✓		✓	
AQ3004	Aquaculture: Stock Improvement	4 Level 2 science subjects & 1 Level 2 aquaculture subjects. Should have completed SC2202 & AQ2001 or equivalent.	✓		✓		✓	
AQ3015	Sustainable Aquaculture	4 Level 2 subjects	✓		✓		✓	
BS2460	Fundamentals of Ecology	2 Level 1 or 2 BS or EV subjects		✓	✓		✓	
BS2470	Evolution	BS1001		✓	✓		✓	
CP2403	Information Processing and Visualisation	4 Subjects inadmissible with CP3413		✓	✓		✓	
CP2404	Database Modelling			✓	✓		✓	
CP2405	Collective Intelligence and Entrepreneurship	8 Subjects	✓	✓	✓		✓	
CP2406	Programming III	CP1404		✓	✓		✓	
CP2408	Design Thinking and Creative IT Industries	CP1403	✓	✓	✓	✓	✓	
CP2409	Network Forensics and Data Communications	CP1402	✓	✓	✓		✓	
CP2410	Algorithms and Data Structures	2 Subjects with CP Prefix		✓	✓		✓	
CP2411	3D Modelling and Animation	2 Subjects with CP Prefix		✓	✓		✓	
CP2412	Game Design and Technologies	2 Subjects with CP Prefix		✓	✓		✓	
CP2414	Network Security	CP1402		✓	✓		✓	
CP2421	Machine Learning for Cybersecurity	CP1401, MA1580		✓	✓		✓	
CP2422	Cloud and Data Center 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	8 Subjects		✓	✓		✓	
CP3402	Content Management Systems	CP1404 AND CP1406 AND 8 Subjects with CP Prefix		✓	✓		✓	
CP3403	Data Mining	CP2403 and CP2404 or 6 Subjects including any 2 with CP Prefix		✓	✓		✓	
CP3404	Information Security	CP2414 or 6 Subjects including CP1402		✓	✓		✓	
CP3405	Design Thinking and Project Management	CP2408		✓	✓		✓	
CP3406	Mobile Computing	CP1404 and 18 credit points of CP subjects		✓	✓		✓	
CP3407	Advanced Software Engineering	CP1404 and 6 Subjects with CP Prefix		✓	✓		✓	
CP3408	Game Engine and Simulation	CP1404 and 6 Subjects with CP Prefix		✓	✓		✓	
CP3413	Information Processing and Visualisation	4 Subjects with BUIBX Drefix Inadmissible with CP2403		✓	✓		✓	
CP3414	Ethical Hacking	CP2422 and CP2423		✓	✓		✓	
CP3415	Strategy and Governance	CP2424		✓	✓		✓	
CP3416	Behavioral Cybersecurity	12 Subjects with MA / CP Prefix		✓	✓		✓	
CP3417	Cybersecurity for Operational Technology	CP2423		✓	✓		✓	
CP3418	Best Practices in Cybersecurity	CP3414		✓	✓		✓	
EE2201	Circuit Theory	EG1012 and MA2000. Allow concurrent enrolment for MA2000.		✓	✓		✓	
EE3901	Sensor Technologies	EE2201 and CC2003	✓	✓	✓		✓	
EV2011	The Case for Sustainability			✓	✓		✓	
EV2502	Introduction to Geographic Information Systems	4 Level 1 subjects		✓	✓		✓	
EV3011	Sustainability in Practice			✓	✓		✓	
EV3110	Environmental and Social Impact Assessment	4 Level 2 subjects		✓	✓		✓	
MA2000	Mathematics for Scientists and Engineers	MA1003		✓	✓		✓	
MA2210	Linear Algebra	MA1003. Recommended to complete MA2000.		✓	✓		✓	
MA2211	Discrete Mathematics	Maths B		✓	✓		✓	
MA2405	Advanced Statistical Modelling	SC2202 and MA1000		✓	✓		✓	
MA2830	Data Visualisation			✓	✓		✓	
MA3212	Optimisation and Operations Research	MA2000 and MA2210		✓	✓		✓	
MA3405	Statistical Data Mining for Big Data	MA2405 or MA2000 or SC2202		✓	✓		✓	
MA3831	Natural Language Processing, Web Scrapping and Large Data Processing	CP1404 AND MA3405		✓	✓		✓	
MA3832	Neural Network and Deep Learning	MA3405 and CP1404		✓	✓		✓	
MB3200	Marine Conservation Biology	SC2202 or BS2460		✓	✓		✓	
MB5001	Tropical Marine Ecology and Coastal Impacts	Available to undergraduate students in their third year with a GPA >= 5 and with permission of subject coordinator.			✓		✓	
MI2031	Diagnosis Of Bacterial Diseases In Aquaculture		✓	✓	✓		✓	

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

* To request enrolment in this subject student's should (1) attain 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.