

## THE UNIVERSITY OF QUEENSLAND

### Bachelor of Biotechnology (Honours) (Pre-medicine Study Plans)

#### Program information

#### General study planner

Pre-medicine Study Plans are also available for the

**Bachelor of Biomedical Science, the Bachelor of Science and the Bachelor of Advanced Science (Honours)**

The 4 year Bachelor of Biotechnology (Honours) provides clear study plans that allow students to prepare appropriately for subsequent study in the MD program, whilst still having sufficient elective credit to provide some flexibility according to students' interests and aptitudes. Academic advisors in the Faculty of Science will be able to help to devise a specific program of study for individual students. The Bachelor of Biotechnology (Honours) provides a good foundation for understanding personalised medicine and for becoming involved in the development of innovative medical products in the future.

**Please note:** These study plans for first to third year are a suggestion only, and there are many other course progressions that can provide appropriate background for entry to the MD. If you need further assistance or would like to speak to an academic advisor, please contact the [Science Student Enquiries Office](#).

**From 2022, BIOM2011 and BIOM2012 will be compulsory prerequisites for entry to the MD.** If you intend to apply for entry to the MD in or after 2022, you must complete these courses in your undergraduate program.

#### PLAN 1: Bachelor of Biotechnology (Honours) – Major in Bioinformatics

This plan allows students to meet the requirements of the major in Bioinformatics, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Bioinformatics major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown **in red** and courses that are recommended as pre-med courses are shown **in blue**. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Bioinformatics) and enter the MD program (subject to meeting other MD program requirements).

	Semester 1		Semester 2	
Year One	BIOL1020	Genes, Cells and Evolution	CHEM1200	Chemistry 2
	CHEM1100	Chemistry 1	MATH1051 or MATH1071	[Calculus and Linear Algebra or

				Advanced Calculus & Linear Algebra]
	CSSE1001	Introduction to Software Engineering	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	BIOL1040 (Part A elective)	Cells to Organisms
<b>Year Two</b>	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	SCIE2100	Introduction to Bioinformatics	BIOL2202	Genetics
	BIOM2011 (Part A elective)	Integrative Cell and Tissue Biology	CSSE2002	Programming in the Large
	BIOM2020 (Off-list elective)	Human Anatomy	BIOM2012 (Part A elective)	Systems Physiology
<b>Year Three</b>	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOL3004	Genomics and Bioinformatics	BIOL3014	Advanced Bioinformatics
	COSC3000	Visualisation, Computer Graphics and Data Analysis	[COMP3506 or COMP3702 or BIOC3005]	[Algorithms and Data Structures or Artificial Intelligence or Molecular Systems Biology]
	Elective	Part A elective	Elective	Part A elective

## PLAN 2: Bachelor of Biotechnology (Honours) – Major in Bioprocess Technology

This plan allows students to meet the requirements of the major in Bioprocess Technology, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Bioprocess Technology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown **in red** and courses that are recommended as pre-med courses are shown **in blue**. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Bioprocess Technology) and enter the MD program (subject to meeting other MD program requirements).

	<b>Semester 1</b>		<b>Semester 2</b>	
<b>Year One</b>	BIOL1020	Genes, Cells and Evolution	CHEM1200	Chemistry 2

	CHEM1100	Chemistry 1	MATH1052	[Multivariate Calculus and Ordinary Differential Equations or  Advanced Multivariate Calculus and Ordinary Differential Equations]
	[MATH1051 or MATH1071]	[Calculus and Linear Algebra 1 or  Advanced Calculus & Linear Algebra]	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	BIOL1040  (Part A elective)	Cells to Organisms
<b>Year Two</b>	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	CHEE2001	Process Principles	BIOL2202	Genetics
	BIOM2011  (Part A elective)	Integrative Cell and Tissue Biology	[MICR2000 or CHEM2052 or CHEM2060]	[Microbiology and Immunology; or  Chemical Biology; or  Immediate Chemistry 2]
	BIOM2020  (Off-list elective)	Human Anatomy	BIOM2012  (Part A elective)	Systems Physiology
<b>Year Three</b>	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOL3004	Genomics and Bioinformatics	BIOC3005	Molecular Systems Biology
	CHEE4020	Biomolecular Engineering	[CHEE4028 or  MICR3001 or  MICR3004]	[Metabolic Engineering or  Microbes and Human Health or  Microbial Genomics]
	Elective	Part A elective	Elective	Part A elective

### PLAN 3: Bachelor of Biotechnology (Honours) – Major in Chemical Biotechnology

This plan allows students to meet the requirements of the major in Chemical Biotechnology, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Chemical Biotechnology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown in red

and courses that are recommended as pre-med courses are shown in blue. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Chemical Biotechnology) and enter the MD program (subject to meeting other MD program requirements).

	Semester 1		Semester 2	
Year One	BIOL1020	Genes, Cells and Evolution	BIOL1040	Cells to Organisms
	CHEM1100	Chemistry 1	CHEM1200	Chemistry
	[SCIE1000 or BIOL1030]	[Theory and Practice in Science or Global Challenges in Biology]	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	Elective	Part A elective
Year Two	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	CHEM2050	Intermediate Chemistry 1	BIOL2202	Genetics
	CHEM2054	Experimental Chemistry	BIOM2012 (Part A elective)	Systems Physiology
	BIOM2011 (Part A elective)	Integrative Cell and Tissue Biology	Elective	Part A elective
Year Three	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	[BIOC3000 or CHEM3001]	[Advanced Biochemistry and Molecular Biology or Advanced Organic Chemistry]	CHEM3020	Medicinal Chemistry and Chemical Biology
	CHEM3004	Determination of Molecular Structure	CHEM3016	Advanced Experimental Chemistry
	BIOM2020 (Off-list elective)	Human Anatomy	Elective	Part A elective

### PLAN 4: Bachelor of Biotechnology (Honours) – Major in Drug Design and Development

This plan allows students to meet the requirements of the major in Drug Design and Development, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Drug Design and Development major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown in red and courses that are recommended as pre-med courses are shown in blue. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Drug Design and Development) and enter the MD program (subject to meeting other MD program requirements).

	Semester 1		Semester 2	
Year One	BIOL1020	Genes, Cells and Evolution	BIOL1040	Cells to Organisms
	CHEM1100	Chemistry 1	CHEM1200	Chemistry 2
	[SCIE1000 or BIOL1030]	[Theory and Practice in Science or  Global Challenges in Biology]	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	Elective	Part A elective
Year Two	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	CHEM2050	Intermediate Chemistry 1	BIOM2402	Principles of Pharmacology
	CHEM2054	Experimental Chemistry	BIOM2012 (Part A elective)	Systems Physiology
	BIOM2011 (Part A elective)	Integrative Cell and Tissue Biology	Elective	Part A elective
Year Three	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOM3401	Systems Pharmacology	CHEM3020	Medicinal Chemistry and Chemical Biology
	BIOT3002	Drug Design and Development	[BIOM3402 or CHEM3016]	[Experimental Pharmacology or Advanced Experimental Chemistry]
	BIOM2020	Human Anatomy	Elective	Part A elective

	(Off-list elective)			
<b>PLAN 5: Bachelor of Biotechnology (Honours) – Major in Microbial Biotechnology</b>				
<p>This plan allows students to meet the requirements of the major in Microbial Biotechnology, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Microbial Biotechnology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown <b>in red</b> and courses that are recommended as pre-med courses are shown <b>in blue</b>. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Microbial Biotechnology) and enter the MD program (subject to meeting other MD program requirements).</p>				
	<b>Semester 1</b>		<b>Semester 2</b>	
<b>Year One</b>	BIOL1020	Genes, Cells and Evolution	BIOL1040	Cells to Organisms
	CHEM1100	Chemistry 1	CHEM1200	Chemistry 2
	[SCIE1000 or BIOL1030]	[Theory and Practice in Science or  Global Challenges in Biology]	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	Elective	Part A elective
<b>Year Two</b>	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	BIOL2200	Cell Structure and Function	BIOL2202	Genetics
	BIOM2011  (Part A elective)	Integrative Cell and Tissue Biology	MICR2000	Microbiology and Immunology
	BIOM2020  (Off-list elective)	Human Anatomy	BIOM2012  (Part A elective)	Systems Physiology
<b>Year Three</b>	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOL3004	Genomics and Bioinformatics	MICR3001	Microbes and Human Health
	MICR3003	Molecular Microbiology	Elective	Part A elective
	[BIOL3003 or	[Advanced Immunology or	Elective	Part A elective

	BIOL3009 or MICR3002]	Arthropods and Human Health or Virology]		
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### PLAN 6: Bachelor of Biotechnology (Honours) – Major in Molecular Biotechnology

This plan allows students to meet the requirements of the major in Molecular Biotechnology, and the recommended areas of prior study for the MD. This plan shows the 34 units of compulsory courses for the Molecular Biotechnology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown **in red** and courses that are recommended as pre-med courses are shown **in blue**. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Molecular Biotechnology) and enter the MD program (subject to meeting other MD program requirements).

	Semester 1		Semester 2	
<b>Year One</b>	<b>BIOL1020</b>	<b>Genes, Cells and Evolution</b>	<b>BIOL1040</b>	<b>Cells to Organisms</b>
	CHEM1100	Chemistry 1	CHEM1200	Chemistry 2
	[SCIE1000 or BIOL1030]	[Theory and Practice in Science or Global Challenges in Biology]	<b>STAT1201</b>	<b>Analysis of Scientific Data</b>
	Elective	Part A elective	Elective	Part A elective
<b>Year Two</b>	<b>BIOC2000</b>	<b>Biochemistry and Molecular Biology</b>	BIOT2002	Introduction to Biotechnology
	<b>BIOL2200</b>	<b>Cell Structure and Function</b>	<b>BIOL2202</b>	<b>Genetics</b>
	<b>BIOM2011</b> (Part A elective)	<b>Integrative Cell and Tissue Biology</b>	CHEM2052	Chemical Biology
	<b>BIOM2020</b> (Off-list elective)	<b>Anatomy</b>	<b>BIOM2012</b> (Part A elective)	<b>Systems Physiology</b>
<b>Year Three</b>	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOL3004	Genomics and Bioinformatics	[BIOC3005 or BIOC3003 or	[Molecular Systems Biology or

			MICR3004]	Human Molecular Genetics and Disease or  Microbial Genomics]
	BIOC3000	Advanced Biochemistry and Molecular Biology	Elective	Part A elective
	[BIOL3006 or BIOL3003 or CHEM3004]	[Molecular Cell Biology or  Advanced Immunology or  Determination of Molecular Structure]	Elective	Part A elective

### PLAN 7: Bachelor of Biotechnology (Honours) – Major in Nanotechnology

This plan allows students to meet the requirements of the major in Nanotechnology, and the recommended areas of prior study for the MD. This plan shows the 34-units of compulsory courses for the Nanotechnology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown in red and courses that are recommended as pre-med courses are shown in blue. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Nanotechnology) and enter the MD program (subject to meeting other MD program requirements).

	Semester 1		Semester 2	
Year One	BIOL1020	Genes, Cells and Evolution	BIOL1040	Cells to Organisms
	CHEM1100	Chemistry 1	CHEM1200	Chemistry
	[SCIE1000 or BIOL1030]	[Theory and Practice in Science or  Global Challenges in Biology]	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	Elective	Part A elective
Year Two	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	CHEM2050	Intermediate Chemistry 1	CHEM2060	Intermediate Chemistry 2
	CHEM2054	Experimental Chemistry	BIOM2012  (Part A elective)	Systems Physiology
	BIOM2011  (Part A elective)	Integrative Cell and Tissue Biology	BIOL2202  (Part A elective)	Genetics



<b>Year Three</b>	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	[CHEM3001 or CHEM3010]	[Advanced Organic Chemistry or Advanced Inorganic Chemistry]	CHEM3030	Nanomaterials and Self-Assembled Systems
	CHEM3004	Determination of Molecular Structure	CHEM3016	Advanced Experimental Chemistry
	BIOM2020 (Off-list elective)	Human Anatomy	Elective	Part A elective

### PLAN 8: Bachelor of Biotechnology (Honours) – Major in Plant Biotechnology

This plan allows students to meet the requirements of the major in Plant Biotechnology, and the recommended areas of prior study for the MD. This plan shows the 34-units of compulsory courses for the Plant Biotechnology major and indicates spaces for elective courses. Courses that are compulsory prior study for the MD and their first year prerequisites are shown in red and courses that are recommended as pre-med courses are shown in blue. At the end of the third year, students then complete a fourth year Honours research project and graduate from the Bachelor of Biotechnology Honours (Plant Biotechnology) and enter the MD program (subject to meeting other MD program requirements).

	<b>Semester 1</b>		<b>Semester 2</b>	
<b>Year One</b>	BIOL1020	Genes, Cells and Evolution	BIOL1040	Cells to Organisms
	CHEM1100	Chemistry 1	CHEM1200	Chemistry
	BIOL1030	Global Challenges in Biology	STAT1201	Analysis of Scientific Data
	Elective	Part A elective	Elective	Part A elective
<b>Year Two</b>	BIOC2000	Biochemistry and Molecular Biology	BIOT2002	Introduction to Biotechnology
	BIOL2200	Cell Structure and Function	BIOL2202	Genetics
	BIOM2011 (Part A elective)	Integrative Cell and Tissue Biology	BIOL2203	Plant Biology
	BIOM2020	Human Anatomy	BIOM2012	Systems Physiology

	(Off-list elective)		(Part A elective)	
Year Three	BIOT3009	Quality Management Systems in Biotechnology	BIOT3004	Commercialisation of Biotechnology Products
	BIOL3004	Genomics and Bioinformatics	BIOL3200	Current Topics in Plant Science
	BIOL3203	Plant Molecular Biology and Biotechnology	[BIOL3011 or BIOL3204]	[Plant Microbe and Insect Interactions or Plant Adaptation and Global Change]
	Elective	Part A elective	Elective	Part A elective