

**GUIDELINES FOR
 BACHELOR OF SCIENCE
 CELLULAR, MOLECULAR AND
 MICROBIAL BIOLOGY MAJOR**

HIGH SCHOOL PREREQUISITES

ENGLISH			
IF YOU TOOK	YOUR GRADE		CHOOSE
English Studies 12 or English First Peoples 12 or	73% or higher	} →	ENGL 1100 (recommended) or ENGL 1110 or ENGL 1120 or ENGL 1140 or 1150 or ENGL 1210
ESAL 0570 and 0580 or ENGL 0600 or ENGL 0620	65% or higher 65% or higher		
English Studies 12 or English First Peoples 12	Below 73%	→	ACCUPLACER Assessment or ENGL 0600 or 0620
BIOLOGY			
IF YOU TOOK	YOUR GRADE		CHOOSE
Life Sciences 11 or Biology 11 or Anatomy & Physiology 12 or Biology 12 AND Chemistry 11	67% or higher	→	BIOL 1110 AND 1210
Life Sciences 11 or Biology 11	Below 67%	→	BIOL 0500
IF YOU NEED			
Life Sciences 11 or Biology 11		→	BIOL 0500
Chemistry 11		→	CHEM 0500
CHEMISTRY			
IF YOU TOOK	YOUR GRADE		CHOOSE
Chemistry 11 AND Pre-Calculus 12	67% or higher (recommended)	→	CHEM 1500 AND 1510
Chemistry 12 AND Pre-Calculus 12	73% or higher (recommended)	→	CHEM 1500 AND 1520
IF YOU NEED			
Chemistry 11		→	CHEM 0500
Chemistry 12		→	CHEM 0600
Pre-Calculus 12		→	SEE MATH SECTION BELOW
PHYSICS			
IF YOU TOOK	YOUR GRADE		CHOOSE
Physics 11 AND Pre-Calculus 12	67% or higher	→	PHYS 1100 AND 1200
Physics 12 AND Pre-Calculus 12	67% or higher	→	PHYS 1150 AND 1250
Physics 11	Below 67%	→	PHYS 0500
IF YOU NEED			
Physics 11		→	PHYS 0500
Physics 12		→	PHYS 0600
Pre-Calculus 12		→	SEE MATH SECTION BELOW

MATH – EVERY SCIENCE MAJOR REQUIRES 6 CREDITS OF FIRST-YEAR CALCULUS

IF YOU TOOK	YOUR GRADE		CHOOSE
Pre-Calculus 12	67% or higher (within the last 2 years)	➡	One of the following streams: MATH 1140 AND 1240 MATH 1150 AND 1250
Pre-Calculus 12	Below 67% (within the last 2 years)	➡	MATH 1000 or 0630 or 0600 + 0610
Foundations 12	All grades	➡	MATH 0510 + MATH 0600 + MATH 0610

MATH 1140/1240 is recommended for all Science Majors
MATH 1150/1250 is recommended for all Biology Majors

PLEASE NOTE: For all high school courses with no required grade listed, 67% or higher is highly recommended.
For best chances of academic success, completion of the grade 12 level of the subject area of your intended major is recommended. (e.g. for a Physics major, you should have Grade 12 Physics). High school equivalent courses can be taken or repeated at TRU.

SUGGESTED FIRST- AND SECOND-YEAR PLAN

YEAR 1	
FALL SEMESTER	WINTER SEMESTER
ENGL 1100 or 1110	ENGL 1100 or 1110 or 1120 or 1140 or *1150 or 1210 (see note #2 next page: CMNS 2290 or 2300 or non-Science elective)
BIOL 1210	BIOL 1110
CHEM 1500	CHEM 1510 or 1520
MATH 1150 (preferred) or 1140	MATH 1250 (preferred) or 1240
PHYS 1100 or 1150	PHYS 1200 or 1250 (see note #3 next page)
YEAR 2	
FALL SEMESTER	WINTER SEMESTER
CHEM 2120	CHEM 2220
BIOL 2160 (important)	BIOL 2130
BIOL 2170	BIOL 2340
BIOL 2280	BIOL 2290
Non-Science Elective	COMP (3 credits) (see note #5 next page)

COURSE OFFERINGS – 1000/2000 level

Note: Many science and math courses are offered in Fall or Winter semester only.

FALL SEMESTER ONLY	WINTER SEMESTER ONLY
BIOL 1210	BIOL 1110
BIOL 2160	BIOL 2130
BIOL 2170	BIOL 2340
BIOL 2280	BIOL 2290
CHEM 1500	CHEM 1510 or 1520
CHEM 2120	CHEM 2220
MATH 1150	MATH 1250
PHYS 1150	PHYS 1250

Bachelor Of Science CELLULAR, MOLECULAR & MICROBIAL BIOLOGY (CMMB) MAJOR Checksheet (120 credits)

1000-Level CORE courses (33 credits)			2000-Level CORE courses (24 credits)			3000/4000-Level (42 credits)				
COURSE		GRADE	COURSE		GRADE	COURSE		GRADE		
ENGL 1100 or 1110 ^{1,2}		_____	BIOL 2130 - Cell Biology		_____	BIOL 3000 - Biometrics		_____		
ENGL 1100, 1110, 1120, 1140, 1150, 1210 ^{1,2}		_____	BIOL 2340 - Introduction to Genetics		_____	BIOL 3130 - Introduction to Biochemistry		_____		
BIOL 1110 - Principles of Biology 1		_____	BIOL 2160 - Introductory Microbiology		_____	BIOL 3230 - Biochemistry		_____		
BIOL 1210 - Principles of Biology 2		_____	BIOL 2170 - Introduction to Ecology		_____	BIOL 3350 - Molecular Genetics		_____		
CHEM 1500 - Chemical Bonding/Organic Chem.		_____	BIOL 2280 - Evolution & Ecology of Land Plants		_____	BIOL 3520 - Cell Physiology		_____		
CHEM 1510 or 1520		_____	BIOL 2290 - Evolution of Animal Body Plans		_____	BIOL 3210 - Microbial Ecology		_____		
MATH 1140 (or 1150) -Calculus 1		_____	CHEM 2120 - Organic Chemistry 1		_____	BIOL 3400 - Reading and Writing Great Biology		_____		
MATH 1240 (or 1250) -Calculus 2		_____	CHEM 2220 - Organic Chemistry 2		_____	BIOL 4110 - Advanced Microbiology Lab		_____		
MATH 1240 (or 1250) -Calculus 2		_____	ELECTIVES (21 credits)			BIOL 4210 - Microbial Physiology		_____		
PHYS 1100 or 1150 ³		_____	Non-science elective ⁴		_____	BIOL 4130 - Molecular Evolution		_____		
PHYS 1200 or 1250 ³		_____	Non-science elective ⁴		_____	BIOL 4250 - Biochemical Techniques 2		_____		
COMP 3 credits ¹		_____	Non-science elective ⁴		_____	BIOL 4350 - Regulation of Gene Expression		_____		
Notes: 1. Must be taken prior to third year. 2. Students with a B or better in ENGL 1100 or 1110 need only take 3 credits of ENGL. The remaining 3 credits may be taken in any discipline outside science. CMNS 2300 is recommended. (*English 1150 may not be suitable for professional programs. Please consult your Advisor.) 3. Students with a grade of 80% or better in Physics 12 only need to complete PHYS 1150 (3 credits). The remaining 3 credits may be taken in any subject area. 4. Non-Science electives must be in at least two different subject areas (other than English). 5. The 3 credits of COMP may be COMP 1020/1030/and one other 1-credit COMP OR COMP 1110 OR COMP 1130.		Elective in lieu of 2 nd ENGL ²		_____	CMMB Electives - Choose 2 from (6 credits):					
		General elective (1000-4000 level)		_____						
		3000/4000 elective		_____	3000/4000 elective		_____	BIOL 3010, BIOL 3200, BIOL 3310, BIOL 3510, BIOL 3540, BIOL 3550, BIOL 3800, BIOL 4150, BIOL 4480, BIOL 4490, BIOL 4600		
		3000/4000 elective		_____	3000/4000 elective		_____	CMMB elective		_____
		3000/4000 elective		_____	3000/4000 elective		_____	CMMB elective		_____
		Electives: Institutional Learning Outcomes (ILOs) may be required to graduate. Refer to the Degree Works website for more information.				Honours Courses				
		CMMB Honours Program: Requires completion of 126 credits: 117 credits as above (minus 3 credits of upper-level electives) plus BIOL 3980 and BIOL 4980 (3 credits) and BIOL 4990 (Honours Thesis; 6 credits).				BIOL 3980 – Intro to Research		_____		
						BIOL 4980 – Honours Seminar		_____		
						BIOL 4990 – Honours Thesis		_____		

***NEW** Institutional Learning Outcomes (ILO) Requirements – your [Degree Works Program Plan](#) is available through [myTRU](#)

KEEP IN MIND

This form is meant to be used as a guideline in conjunction with the [TRU Academic Calendar](#) and [Course Schedule](#). Please see these resources for more about course prerequisites and co-requisites.

Course Load: Transitioning to university can be challenging and many students choose to take a lighter course load. Please speak with Academic Advising to discuss sequencing, workload, future career and educational goals and more.

KEEP IN MIND

Institutional Learning Outcomes (ILOs): May be required for your program. Using the **Degree Works** planning tool will help you identify which courses apply.

Degree Works Planning Tool: More information is available through the Degree Works website at: tru.ca/current/academic-supports/degreeworks

BACHELOR OF SCIENCE – FIRST- AND SECOND-YEAR NON-SCIENCE ELECTIVES				
Anthropology (ANTH)	All		Linguistics (LING)	All
Archaeology (ARCH)	All		Management (MNGT)	1710
Accounting (ACCT)	2210, 2250		Marketing (MKTG)	2430
Business Law (BLAW)	2910		Modern Languages (MLAN)	All
Chinese (CHIN)	1110, 1210		Music (MUSI)	All
Communications (CMNS)	All		Organizational Behaviour (ORGB)	2810
Creative Writing (CRWR)	All		Philosophy (PHIL)	All
Economics (ECON)	All		Physical Education (PHED) non-Activity	1000, 1230, 2110, 2130, 2140, 2210
French (FRAN)	All		Political Studies (POLI)	All
Film (FILM)	All		Psychology (PSYC)	All
Finance (FNCE)	2120		Service & Community Learning (SRCL)	1000
First Nation Language (FNLG)	All		Sociology (SOCL)	All
Geography (GEOG) (non-physical)	1010, 1100, 1110, 2110, 2120, 2220, 2230 (excluded: GEOG 1000, 2020)		Spanish (SPAN)	All
German (GERM)	All		Speech (SPEE)	1500, 2500
History (HIST)	All 1000 level & 2000 level		Student Success (STSS)	1010, 1020
Human Resource Management (HRMN)	2820		Theatre (THTR)	All
Indigenous Studies (INDG)	2100		Visual Arts (VISA) (Theory)	All
Japanese (JAPA)	All		Visual Arts (VISA) (Studio)	All
Journalism (JOUR)	2010			