

2023 Biology Articulation Committee Meeting, May 9th – 10th, UBCO

Report from Thompson Rivers University

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B.Sc. Program Information

There are four majors programs offered in Biology at TRU: Biology, Animal Biology; Ecology and Environmental Biology; and Cellular, Molecular and Microbial Biology. In addition, we offer an interdisciplinary Major in Chemical Biology. All majors have a Co-op option and an Honors program. We accept approximately 240-300 students per year into the first-year majors courses (Biology 1110/1210) and also accept transfer students into the second, third and fourth years of the B.Sc. Approximately 60 students graduate from TRU with a Biology/Chemical Biology Major each year. Students in other areas of Science or Arts may complete a Biology Minor, which currently consists of 18 upper level credits of Biology.

Courses Offered (with instructors for 2022/23); Enrollment = course cap = typical enrollment (22/23 enrollment)

Note: LTC = Long term (12-month contract (F= fall semester; W= winter semester; this year all lectures and labs F2F; all courses at Kamloops Campus except Williams Lake sections of Biol 1592/1594 and 1692/1694

Course Number (credits)	Course Name (Semester)	Text	Enrol. per Semester	Hours/ Week	Prereqs	Notes	Course Instructor (in 22/23)
Biol 1040 (3)	Biology of the Environment (F)	Withgott, J, S. Brennan & B. Murck. 2013. Environment – the Science behind the Stories. 2nd Canadian Ed. Pearson.	40 (37)	3 lecture 3 lab	None	Non-majors course with lab	D. Ferguson
Biol 1050 (3)	Biology of Humans (W)	Human Biology 16e - McGraw Hill CONNECT w/SmartBook Sylvia Mader and Michael Windelspecht	60 (56)	3 lecture 3 lab	None	Non-majors course with lab	D. Ferguson Christine Petersen (lab coordinator)
Biol 1110 (3)	Principles of Biol 1 (F)	Freeman, et al. 2019, Biological Science 3 rd Canadian Edition	300 (291)	3 lecture 3 lab; section @ 25 students	Biol 11 or 12, Chem 11	4 lecture sections; typically, 16 lab sections @ 20 students	-J. Van Hamme -E Bottos; -N. Ramroop Singh -J. Urban

Biol 1210 (3)	Principles of Biol 2 (W)	Freeman, et al. 2019, Biological Science 3 rd Canadian Edition	240 (286)	3 lecture 3 lab	Biol 11 or 12, Chem 11	3 lecture sections; typically 13 sections @20 students each	M. Reudink,, Sessional: M. Jones (2 sections)
Biol 1592 (3)	Human Anatomy & Physiology 1 (F)	Martini, Fundamentals of Anatomy and Physiology 11 th ed (Pearson)	220 (180)	3 lecture	Biol 12/0600 (C+) and Chem 11/0500	Lecture only version of Biol 1590	K. Ross
Biol 1592 (3)	Human Anatomy & Physiology 1 (F)	Martini, Fundamentals of Anatomy and Physiology 11 th ed (Pearson)	12 (11)	3 lecture	Biol 12/0600 (C+) and Chem 11/0500	Lecture only version of Biol 1590—at Williams Lake Campus	Sessional Christian Lass
Biol 1594 (0)	Human Anatomy & Physiology 1 (F)	In house lab manual	100 (127)	2 lab	BIOL 1592 (co-req)	Lab for Biol 1592 (not req for all 1592 students) 1592 + 1594 is identical to Biol 1590	Margaret Sonnenfeld

Biol 1594 (0)	Human Anatomy & Physiology 1 (F)	In house lab manual	12 (10)	2 lab	BIOL 1592 (co-req)	Lab for Biol 1592. at Williams Lake Campus	Sheldan Myers
Biol 1692 (3)	Human Anatomy & Physiology 2 (W)	Martini, Fundamentals of Anatomy and Physiology 11 th ed (Pearson)	180 (160)	3 lecture	BIOL 1592	Lecture only version of Biol 1690	K. Ross
Biol 1692 (3)	Human Anatomy & Physiology 2 (W)	Martini, Fundamentals of Anatomy and Physiology 11 th ed (Pearson)	12 (10)	3 lecture	BIOL 1592	Lecture only version of Biol 1690: at Williams Lake campus	Sessional: Christian Lass
Biol 1694 (0)	Human Anatomy & Physiology 2 (W)	In house lab manual	80 (85)	2 lab	BIOL 1692 (co-req)	Lab for Biol 1692 (not req for all 1692 students) 1692 + 1694 is identical to Biol 1690	Margaret Sonnenfeld

Biol 1694 (0)	Human Anatomy & Physiology 2 (W)	In house lab manual	12 (10)	2 lab	BIOL 1692 (co-req)	Lab for Biol 1692 (not req for all 1692 students) at Williams Lake Campus	Sheldan Myers
Biol 2130 (3)	Cell Biology (W)	Recommended but not required. 1- World of the Cell, Becker- 9th edition- Pearson 2- The Cell, Molecular Approach- 8th edition- Sinauer association 3- Molecular Biology of the Cell- 6th edition- Garland Science	90 (90)	3 lecture 1 sem* 3 lab*	Biol 1110 Chem 1500 and 1510 or 1520	labs and seminars in alternative weeks;6 lab sections with 15 students in each section/ 5 seminar sections with 18 students in each section	S. Irani (lecture; seminar; lab coordinator)
Biol 2160 (3)	Intro Microbiology (F)	Wessner, Dupont and Charles: Microbiology, 2013 Wiley.	96 (90)	3 lecture 3 lab	Biol 1110/12 10 Chem 1500 and 1510 or 1520	Includes lab— 6 lab sections at 16 students each:	N. Cheeptham (Ann) Lecture J. Urban (lab coordinator)

Biol 2170 (3)	Intro Ecology (F)	Smith RL, Smith TM (2015) Elements of Ecology, 9th Edition. Pearson, Toronto	72 (72)	3 lecture 3 lab	Biol 1110/12 10	4 Lab sections @18	L. Gosselin
Biol 2280 (3)	Evol. and Ecol. of Land Plants (F)	No assigned text; readings from library ebooks assigned for each topic	72 (69)	3 lecture 3 lab	Biol 1110/12 10	4 lab sections @18	Sessional: M. Jones
Biol 2290 (3)	Evolution of Animal Body Plans (W)	Ruppert EE, Fox RS, Barnes RD (2004) Invertebrate Zool. 7 ed. Saunders College	64 (64)	3 lecture 3 lab	Biol 1110/12 10	4 lab sections @16	L. Gosselin
Biol 2340 (3)	Introduction to Genetics (W)	Open Genetics, Ramroop Singh N (2023) Thompson Rivers University	90 (89)	3 lecture 1 sem* 3 lab*	Biol 1110/12 10	lab and seminar in alt wks	N. Ramroop Singh
Biol 3000 (3)	Biometrics (W + F) ****	Introductory Statistics (OpenStax), 2019. B. Illowsky and S. Dean.	F 60 (60), W 40 (38)	3 lecture 2 lab	Math 1140/12 40 or 1150/12 50	Separate sections offered fall and winter (3 labs in fall, 2 in winter each @ 20)	E. Studd

					BIOL 1110/12 10		
Biol 3010 (3)	Bioinformatic s (F)	V. Buffalo (2014) Bioinformatics Data Skills Reproducible and Robust Research with Open Source Tools, O'Reilly Media	20 (5)	2 lecture, 1 sem, 2 lab	Biol 1110 Comp 1090	none	J. Van Hamme
Biol 3030 (3)	Population Biology (W)	Recommended but not required: Smith TM, Smith RL, Waters I (2014) Elements of Ecology, Canadian Ed. Pearson	90 (91)	3 lecture 1 sem	Biol 2170	5 seminars	Sessional: M. Jones
Biol 3100 (3)	Intro to Animal Behavior (F)	De Waal, F. (2017) Are we smart enough to know how smart animals are? WW Norton	28 (34)	3 lecture 2 lab	Biol 1110/12 10	2 lab sections @ 16	M. Reudink

Biol 3110 (3)	Field Ornithology** (W)	The Sibley Field Guide to Birds of Western North America, 2 nd Edition	12 (15)	1 lecture, 1 sem, 4 lab (field course)	3 rd year standing	Alt years (May 2023 next, last taught 2021)	N. Flood/S. Joly
Biol 3130 (3)	Introduction to Biochemistry (F)	Nelson DL and Cox MM (2017) Lehninger – Principles of Biochemistry, 7th Edition, W.H.Freeman and Company, New York	72 (52)	3 lecture	Biol 2130, Chem 2120/2220	Cross Listed as CHEM 3730	N. Ramroop Singh
Biol 3200 (3)	Immunology (F)	Parham (2014) "Immune System" (4th ed)	50 (51)	3 lecture	Biol 2130, Biol 2160 recommended	None	J. Urban
Biol 3210 (3)	Microbial Ecology (F)	Selected readings Barton & Northup (2011) Microbial Ecology. Wiley-Blackwell (Optional)	28 (22)	3 lecture	Biol 2160, 2130, Chem 2120/2220, Biol	None	E Bottos

					3130/32 30		
Biol 3220 (3)	Natural History (F)	Baldwin, L. 2014. Finding Place. Mathews, D. 2003. Rocky Mountain Natural History	17 (16)	2 lecture, 4 lab	3 rd year standing ; taken by Arts students	Alt yrs (2020 last, 2022 next)	L. Baldwin
Biol 3230 (3)	Biochemistry (W)	Nelson DL and Cox MM (2017) Lehninger – Principles of Biochemistry, 7th Edition, W.H.Freeman and Company, New York	50 (35)	3 lecture	Biol 3130	None	N. Ramroop Singh
Biol 3260	Field Botany (W)	Selected Readings	16	1 lecture 1 sem 4 lab (field course)	Biol 2280 or 3430	Alt years (not offered 2021,next offering 2023)	L. Baldwin/M. Jones

(NRSC 3170) (3)	Ichthyology (W)	Instructor-provided material	48	3 lecture 3 lab	Biol 2170	Seats reserved for biology students	B. Heise (NRS Dept)
Biol 3310 (3)	Developmental Biology (F)	Gilbert's Developmental Biology (Sinauer)	20 (17)	3 lecture 3 lab	Biol 2130/2340 Co-req Biol 3130/3350		No longer offered
Biol 3350 (3)	Molecular Genetics (F)	Decoding the Language of Genetics David Botstein; recommended: Molecular Biology of the Gene (Seventh Edition) JD Watson TA Baker, SP Bell, A Gann, M Levine & R Losick Cold Spring Harbor Laboratory Press	68 (65)	3 lecture 1 sem	Biol 2130/2340 Co-req Biol 3130	4 seminar sections	D. Nelson

<p>Biol 3400 (3)</p>	<p>Reading and Writing Great Biology (F + W) ****</p>	<p>The Sense of Style: Steven Pinker; Various readings</p>	<p>16 (18 in all sections)</p>	<p>1 lecture 2 sem</p>	<p>3rd yr standing</p>	<p>Req. for all bio majors; course offered in F & W 2 sections either F or W</p>	<p>N. Flood L. Baldwin M. Reudink E. Bottos</p>
<p>Biol 3430 (3)</p>	<p>Plants and People (W)</p>	<p>Pollan, M. 2001. The botany of desire. Pollan, M. 2006. The omnivore's dilemma. Diamond, J. 1999. Guns, germs, and steel. Hanson, T. 2015. The triumph of seeds. Smith, A. and J.B. MacKinnon. 2007. The 100-mile diet. Vintage Canada. Toronto.</p>	<p>32</p>	<p>2 lecture 1 sem 2 lab</p>	<p>3rd year standing</p>	<p>In future, offered every year by request of other departments (to meet GenEd Requirements)</p>	<p>Sessional: M. Jones (Baldwin on Sabbatical)</p>
<p>Biol 3510 (3)</p>	<p>Plant Physiology (F)</p>	<p>Taiz et al. Plant physiology and development. 6th edition- Sinauer Association. (Recommended not required)</p>	<p>12 (6)</p>	<p>3 lecture 3 lab*</p>	<p>Biol 2280</p>	<p>One lab section every week with 6 students</p>	<p>S. Irani (lecture and lab- lab coordinator)</p>

Biol 3520 (3)	Cell Physiology (W)	Alberts B, Bray D, Lewis J, Raff M, Roberts K & Watson JD Molecular Biology of the Cell, 2008 (5 th Ed), combined with Cooper, The Cell: a molecular approach. (Recommended not required)	48 (33)	3 lecture 3 lab*	Biol 3130	3 lab sections every week/ maximum 12 students in each lab section	S. Irani (lecture and 1 lab section)
Biol 3540 (3)	Human Physiology 1(F)	Derrickson 2nd edition "Human Physiology"	48 (46)	3 lecture 3 lab*	Biol 2130, co-req Biol 3130	4 lab sections/alternate weeks	M. Rakobowchuk
Biol 3550 (3)	Human Physiology 2 (W)	Derrickson 2nd edition "Human Physiology" Wiley	36 (31)	3 lecture 3 lab*	Biol 3450	2 lab sections/alternate weeks	M. Rakobowchuk
Biol 3800 (3)	Fermentation Processes in Food and Pharmaceutical	Waites, M, J., Morgan, N.L., Rockey, J.S. and Highton, G. 2001. Industrial Microbiology: An Introduction.	24	3 hours lecture per week	Biol 2160 and 3130 Biol 3110		N. Cheeptham

	Production (F)	Blackwell Science. And selected Readings			recomm ended)		
Biol 3980 (1)	Introduction to Research (W)	Selected Readings	12 (7)	1 sem	3 rd year standing in Biology	Req for Prospective Hons students	N. Cheeptham
(NRSC 3260) (3)	Limnology (F)	Instructor-provided material	48	3 lecture 3 lab	Biol 2170, 3000, 3030	Seats reserved for biology students	B. Heise (NRS Dept)
Biol 4090 (3)	Field Methods in Terrestrial Ecology (W)**	Selected Readings	15 (10)	125 hours (field course)	Biol 2170, 3000, 3030	Alt yrs.	L. Baldwin, N. Flood
Biol 4110 (3)	Advanced Microbiology Lab (W)	Selected Readings	12 (15)	1 lecture 1 sem	Biol 2130, 2160, 4210, Chem		E. Bottos

				3 lab	2120/22 20		
Biol 4120 (3)	Evolution of Flowers (W)	Selected Readings	25 (18))	3 lecture	Biol 2130, 2160, 4210, Chem 2120/22 20	BIOL 2280 or BIOL 3430	L. Baldwin
Biol 4130 (3)	Molecular Evolution (W)	An Introduction to Molecular Evolution and Phylogenetics: Edition 2 By Lindell Bromham Oxford University Press (available at TRU Bookstore and online) Additional and selected reading material from the primary literature will be provided.	26	3 hours lecture per week	Biol 3350	Required for CMMB program	N. Cheeptham
Biol 4140 (3)	Evolution (W)	Selected Readings, Instructor Provided Materials	47	3 lecture	Biol 2280 or 2290, Biol	None	M. Reudink

					2170 or 3030		
Biol 4150 (3)	Biochemical Techniques 1 (F)	Selected Readings, Instructor Provided Materials	20 (18)	1 lecture 1 sem 3 lab	Biol 3130, 3230	Required for CHBI	N. Ramroop Singh
Biol 4160 (3)	Conservation Biology (F)	Selected Readings	16 (17)	2 lecture 2 sem	Biol 3030	None	Sessional: M. Jones
Biol 4210 (3)	Microbial Physiology (W)	White, Drummond & Fuqua. 2012. The physiology and biochemistry of prokaryotes 3 rd or 4 th edition. Oxford University Press	14 (11)	3 lecture	Biol 2160, 3130, 3230, 3350, 3520	Required for CMMB	J. Van Hamme

Biol 4250 (3)	Biochem Techniques 2 (F + W) ****	Selected Readings Molecular Cloning: A Laboratory Manual J. Sambrook & D. Russell	12 & 14 ****	1 lecture 1 sem 3 lab	Biol 3130, 3350	Offered in both semesters	D. Nelson
Biol 4260 (3)	Plant Ecology (W)	Gurevitch, Scheiner, and Fox, 2002. The Ecology of Plants. Parish, Coupe & Lloyd. 1996. Plants of Southern Interior B. C.	32	3 lecture 3 lab	Biol 2170 and 2280	None	L. Baldwin
Biol 4270 (3)	Terrestrial Vertebrate Zoology (F)	The Sibley Guide to Birds. (Western Region), selected readings	16 (16)	2 lecture 3 lab	Biol 2290	Alternate years	T. Dickinson

Biol 4350 (3)	Regulation of Gene Expression (W)	Latchman, D. 2010 Gene Control , 2 nd Ed (Garland)	24 (10)	3 lecture 1 sem	Biol 3130/3350	None	N. Ramroop Singh
Biol 4480 (3)	Directed Studies (F + W)	Selected Readings	20 (15) ****			None	various
Biol 4490(a) (3)	Selected Topics in Biology (W) Medical Microbiology	Selected readings	24 (24)	1 lecture 2 sem	Depends on Topic	Elective	N. Cheeptham and J. Urban
Biol 4490 (4)	Selected Topics in Biology (Spring) International Field School Thailand - Microorganisms, Human Impacts, and Climate Change	Selected readings	12 (19)	2 weeks at TRU pre-departure and 2 weeks at Chiang Mai University	Biol 2160	International Field School Every 2 years	N. Cheeptham and J. Urban

				Thailand.			
Biol 4980 (2)	Honors Seminar (F + W)		10 (6)	2 sem	Acceptance into Honors Program	Required for Honors students	L. Gosselin
Biol 4990 (6)	Honors Thesis (F + W)		10 (6)		Acceptance into Honors Program	Required for Honors students	various

* Denotes every second week

** Runs as a 2-week intensive course in May, lectures in Winter term, scheduled in Winter semester.

**** course run in both semesters (separate sections)

Faculty (regular, ongoing)

Co-Chairs: Rob Higgins; Lyn Baldwin; Mark Rakobowchuk

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FAX: (250) 828-5450; **Web Site:** <http://www.tru.ca/science/programs/biology.html>

Faculty	(250)		Faculty	(250)	
Kathy Baethke (MSc.) (technician)	377-6013	Kbaethke@tru.ca	Stephen Joly (BSc.) (B)	371-5572	sioly@tru.ca
Lyn Baldwin, (PhD) (T)	377-6167	lybaldwin@tru.ca	Don Nelson (PhD) (T)	828-5425	dnelson@tru.ca
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Stephanie Chaput (BSc.)(B)	852-6897	schaput@tru.ca	Susan Purdy (MNRM) (B)*	371-5166	spurdy@tru.ca
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T = tripartite (workload = teaching, research, service), **B** = bipartite (workload = teaching, service)

Institutional Report

Enrollments were fairly steady—some slight increase on average. The Infosilem scheduling software continues to be problematic - this year managing to overlap labs and lectures in the same course a few times and producing other overlap conflicts which means students have to take OL online classes to complete degree requirements.

We have successfully filled one vacancy – a community/ecosystem ecologist, Dr. Emily Studd (tripartite). We have had our two 2 retirements from last year (Tom Dickinson and Nancy Flood) join us as Professor Emeriti. Eric Bottos was granted tenure and promoted to Associate Professor. Naowarat Cheeptham was a 2022 recipient of the 3M National Teaching Fellowship.

The three new co-chairs who were voted in (Rob Higgins, Lyn Baldwin and Mark Rakobowchuk) began this administrative role on June 1st 2022.

This year, the Chair position comes with 6 course releases (down from 7 in the previous year); it remains complex and time consuming, involving computerized scheduling, HR, finance and other online systems and increasing numbers of TAs and sessional instructors. This year, Rob Higgins was 3/7 chair, Mark Rakobowchuk was 2/7 chair and Lyn Baldwin was 1/7 chair. In addition to course release for the position of chair, every year 3 or 4 (those with tri-council funding who request it) of our faculty complement usually get 1 course release for research purposes.

The department is currently in the process of conducting its mandatory Program Review (occurs every 5 years or so). Document compilation, self-study and surveys have been completed and we are awaiting feedback from the Dean's Office on the Final Report. The Program Review will culminate with visits from External Reviewers, expected in Fall 2023.

We continue to support the move to phase out some or most of the majors, in favor of concentrations. Additionally, we intend to switch our offerings of Principles of Biology I and II, moving II to the Fall semester and I to the Winter semester. This will require some re-shuffling of other course offerings as well, to compensate for faculty workload in each semester.

We continue to look at our curriculum, particularly in light of the General Education model which incorporates eight (8) ILOs [Institutional Learning Outcomes]: teamwork, communication, lifelong learning, citizenship, knowledge, critical thinking and investigation, Indigenous knowledge and ways, and intercultural awareness.” For more details, see https://www.tru.ca/vpacademic/curriculum_development_approval/general-education.html).

The requirement for a minor in Biology is being adjusted, from 18 required upper level credits, to 12. This is in an attempt to make the minor more accessible to students, especially those outside the Department and the Faculty at large. This has received the approval from the Science Faculty Council and the Minors committee is in the final stages of preparing the requisite paperwork to have the necessary changes made in CurricUNET.

Our graduates continue to do extremely well, with respect to first, entrance to and then, performance in, a variety of Graduate and Professional schools.