Sc.B. in Computational Biology

CENTER FOR Computational Molecular Biology

This contract must be completed with your advisor and have him/her/them sign it. Check off the boxes that correspond with each completed course. Check off **ONLY** those courses used for this concentration. Any changes to your contract must be initialed by your advisor beside each course that has changed. This contract must be reviewed yearly. If there are no changes, review is still required but approval is automatic.

Student's Legal Name: **Graduation Year:**

Advisor's Name:

Semester Taken: Advisor:

PREREQUISITES:

☐	MATH 0100:	Introductory Calculus II	Fall	_____	_____
	OR				
☐	MATH 0170:	Advanced Placement Calculus	Fall	_____	_____
☐	BIOL 0200:	Foundation of Living Systems	Spring	_____	_____

GENERAL CORE REQUIREMENTS:

BIOLOGY –

☐	BIOL 0470:	Genetics	Fall	_____	_____
☐	BIOL 0280:	Introduction to Biochemistry	Spring	_____	_____
	(OR)				
☐	BIOL 0500:	Introduction to Cell Biology	Spring	_____	_____

CHEMISTRY–

☐	CHEM 0330:	Equilibrium, Rate and Structure	Fall	_____	_____
	(OR)				
☐	CHEM 0350:	Organic Chemistry	Fall	_____	_____

COMPUTER SCIENCE –

☐	CSCI 0111:	Computing Foundations: Data	Fall	_____	_____
	AND				
☐	CSCI 0112:	Computing Foundations: Program Organization	Fall	_____	_____
	AND				
☐	CSCI 0180:	Computer Science: An Integrated Introduction	Spring	_____	_____
	(OR)				
☐	CSCI 0150:	Introduction to Object-Oriented Programming and CS	Spring	_____	_____
	AND				
☐	CSCI 0160:	Introduction to Algorithms and Data Structures	Spring	_____	_____
	(OR)				
☐	CSCI 0170:	Computer Science: An Integrated Introduction	Fall	_____	_____
	AND				
☐	CSCI 0180:	Computer Science: An Integrated Introduction	Spring	_____	_____
	(OR)				
☐	CSCI 0190:	Accelerated Introduction to Computer Science	Fall	_____	_____
	AND				
☐	CSCI____:	_____	Spring	_____	_____
☐	CSCI 0220:	Introduction to Discrete Structures and Probability	Spring	_____	_____

PROBABILITY AND STATISTICS –

☐	APMA 1650:	Statistical Inference I	Fall	_____	_____
	(OR)				
☐	CSCI 1450:	Introduction to Probability and Computing	Fall	_____	_____
	OR				
☐	MATH 1610:	Probability		_____	_____

COMPUTATIONAL BIOLOGY CORE COURSE REQUIREMENTS:

☐	CSCI 1810:	Computational Molecular Biology	Fall	_____	_____
☐	APMA 1080:	Statistical Inference in Molecular Biology and Genomics	Fall	_____	_____

CAPSTONE EXPERIENCE –

Students enrolled in the computational biology concentration will complete a research project in their senior year under faculty supervision. The themes of such projects evolve with the field and the technology but should represent a synthesis of the various specialties of the program. The requirements are either one semester of reading and research with a CCMB faculty member or approved advisor, or a 2000-level computational biology course.

Supervised Reading and Research:

Advisor Name	Advisor Signature	Semester and Year

OR a 2000-Level Course:

Course Number	Course Title	Semester and Year	Advisor Initial

HONORS –

In order to be considered a candidate for honors, students will be expected to maintain an outstanding record, in concentration courses. In addition, students should take at least one semester—and are strongly encouraged to take two semesters—of reading and research with a CCMB faculty member or approved advisor. Students must submit to a public defense of their theses to be open to the CCMB community. Students seeking honors are advised to choose a Thesis Advisor prior to the end of their Junior year at Brown. Students must complete the Registration form for Computational Biology and submit it to CCMB@brown.edu. Any deviation from these rules must be approved by the Director of Undergraduate Studies, in consultation with the student's advisor.

SPECIALIZED TRACKS:

Students must complete courses in one of the following tracks: Computer Science, Biological Sciences, or Applied Mathematics and Statistics.

COMPUTER SCIENCE –

Students must complete three of the following courses:

☐	CSCI 1230:	Introduction to Computer Graphics	Fall	_____	_____
☐	CSCI 1270:	Database Management Systems	Fall	_____	_____
☐	CSCI 1410:	Introduction to Artificial Intelligence	Spring	_____	_____
☐	CSCI 1550:	Probabilistic Methods in Computer Science		_____	_____
☐	CSCI 1570:	Design and Analysis of Algorithms	Spring	_____	_____

OR other Computer Science courses approved by the concentration advisor:

☐	CSCI____:	_____		_____	_____
☐	CSCI____:	_____		_____	_____

AND complete three of the following courses:

☐	CSCI 0330:	Introduction to Computer Systems	Fall	_____	_____
	OR				
☐	CSCI 0320:	Introduction to Software Engineering	Spring	_____	_____
☐	CSCI 1820:	Algorithmic Foundations of Computational Biology	Spring	_____	_____
☐	PHP 2620:	Statistical Methods in Bioinformatics	Spring	_____	_____
☐	APMA 1660:	Statistical Inference II	Spring	_____	_____
☐	BIOL 1430:	Population Genetics		_____	_____
☐	BIOL 1465:	Human Population Genomics	Fall	_____	_____
☐	APMA 1690:	Computational Probability & Statistics	Fall	_____	_____

BIOLOGICAL SCIENCES –

Students must take at least four courses comprising a coherent theme in one of the following areas: Biochemistry, Ecology, Evolution, or Neurobiology:

☐	Course Number	Course Title	Semester and Year	Advisor Initial
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☐	Course Number	Course Title	Semester and Year	Advisor Initial
☐	Course Number	Course Title	Semester and Year	Advisor Initial

AND at least two of the following courses:

☐	CSCI 1820:	Algorithmic Foundations of Computational	Spring	_____	_____
☐	PHP 2620:	Biology Statistical Methods in Bioinformatics	Spring	_____	_____
☐	APMA 1660:	Statistical Inference II	Spring	_____	_____
☐	BIOL 1430:	Population Genetics		_____	_____
☐	BIOL 1465:	Human Population Genomics	Fall	_____	_____
☐	APMA 1690:	Computational Probability and Statistics	Fall	_____	_____

APPLIED MATHEMATICS AND STATISTICS –

Students must take three of the following courses:

☐	APMA 1660:	Statistical Inference II	Spring	_____	_____
☐	APMA 1690:	Computational Probability and Statistics		_____	_____
☐	CSCI 1410:	Introduction to Artificial Intelligence	Spring	_____	_____
☐	APMA 0340:	Methods of Applied Mathematics I,		_____	_____
	AND				
☐	APMA 0330:	II Methods of Applied Mathematics I, II		_____	_____
	OR				
☐	APMA 0360:	Applied Partial Differential Equations I		_____	_____
	AND				
☐	APMA 0350:	Applied Ordinary Differential Equations I		_____	_____

AND at least three of the following courses:

☐	BIOL 1430:	Computational Elements of Molecular Evolution		_____	_____
☐	CSCI 1820:	Algorithmic Foundations of Computational Biology	Spring	_____	_____
☐	PHP 2620:	Statistical Methods in Bioinformatics Quantitative	Spring	_____	_____
☐	APMA 1070:	Models in Biological Systems Human		_____	_____
☐	BIOL 1465:	Population Genomics	Fall	_____	_____

STUDENT ACKNOWLEDGEMENT:

The above is my plan for meeting the degree requirements. It is my responsibility to make certain that all courses taken at Brown University for concentration credit, all courses taken at other institutions for which transfer credit has been approved for concentration credit, and all advanced placement credits appear correctly on my transcript.

INITIAL SIGNING –

Student Signature	Date	Advisor Signature	Date

YEAR 2 SIGNING –

Student Signature	Date	Advisor Signature	Date

YEAR 3 SIGNING –

Student Signature	Date	Advisor Signature	Date