CAMS Major Worksheet- Mathematical Biology

Complete this application and submit along with the Registrar's Declaration of Major Form to the Registrar's Office.

NAME _____ STUDENT ID # _____

EMAIL _____

ADVISOR _____ EXPECTED GRADUATION DATE _____

	Course	Course Title	Credits
Pre-requisites	MATH 111/131 MATH 112/132 BIOL 203 BIOL 204	Calculus I Calculus II Intro to Molecules, Cell, Development Intro to Organisms, Ecology, Evolution	--
Math Req.	MATH 211 MATH 212/213	Linear Algebra Multivariable Calculus	6 - 7
Computational Req.	CSCI 140/141/DATA141 CSCI 241	Introduction to Programming Data Structures	7
Mathematical Modeling Req. (2 courses)	BIOL 325 **OR** MATH 345	Intro to Quantitative Biology Intro to Mathematical biology	3-4
	APSC 351 **OR** MATH 356	Cellular Biophysics and Modeling Random Walks in Biology	3
Circle or highlight planned electives in each category			
Statistics and Data Analysis (2 courses)	BIOL 327 MATH 351 MATH 352 MATH 451 MATH 452	Introduction to Biostatistics Prob. and Stats. for Sci. Statistical Data Analysis Probability Mathematical Statistics (Note: 351 cannot be taken for credit if 451 has already been taken)	6-7
Computational (1 course)	BIOL 404 CSCI 301 CSCI 303 CSCI 426 CSCI 520 DATA 302 DATA 441 DATA 442 PHYS 256	Applied Programming for Biology Software Development Algorithms Simulation Computing in Operations Research Databases Advanced Applications of AI Neural Networks & Deep Learning Practical Computing for Scientists	3
Biology (2 courses at least 3 credits each)	BIOL 3XX/ BIOL 4XX List #1: List #2:	Any biology course at the 300-level or 400-level	6-7
Applications and Models (2 courses)	APSC 327 APSC 371 APSC 427 APSC 430 APSC 450 BIOL 377 CHEM 341 CHEM 314 CSCI 215 CSCI 416 DATA 301 DATA 340 DATA 431 MATH 302 MATH 356 MATH 413 and/or 414 MATH 441 MATH 442 PHYS 302 PHYS 403 MATH 410/APSC 490	Intro. to Laser Biomedicine Matroids: The Value of Abstraction Biomedical Materials and Devices Biofabrication in Tissue Engineering Comp. Neuroscience Bioeng. and Synthetic Biol. Phys. Chem. for Life Sci. Biochemistry Intro. to Bioinformatics Intro. to Machine Learning Applied Machine Learning Time Series Analysis Spatial Data Discovery Ordinary Differential Eq. Random Walks in Biology Numeric. Analysis I & II Nonlinear Dynamics Partial Differential Eq. Fluid Mechanics Stat. Mech. and Thermo. Topics Courses (subject to approval of CAMS Math Bio Track Director)	6

Note: Students may petition the Track Director or CAMS Director to substitute a single elective course with a research credit, independent study course, or honors thesis course. In total, at most one elective may be substituted in this manner. At the discretion of the directors, permission may be granted if the research content is considered equivalent to the elective requirement.

Advisor Signature _____Date_____

Track Director or Director Signature_____Date_____

Revised Aug. 2025