Mathematical and Scientific Computation B.S. (Biology Emphasis)

SAMPLE SCHEDULE

YEAR 1	YEAR 2
FALL QUARTER: MAT 21A	FALL QUARTER: MAT 21D, ECS 32A
WINTER QUARTER: MAT 21B	WINTER QUARTER: MAT 22/27A, MAT 108
SPRING QUARTER: MAT 21C, ENG 6	SPRING QUARTER: MAT 22/27B, MAT 127A
YEAR 3	**YEAR 4**
FALL QUARTER: MAT 127B, MAT 135A	FALL QUARTER: MAT 150A, MAT 128A
WINTER QUARTER: MAT 127C, Biology class	WINTER QUARTER: MAT 128B, 1 Enrichment class
SPRING QUARTER: MAT 124, 1 Enrichment class	SPRING QUARTER: MAT 128C, Capstone

2020-2021 Requirements

PREPARATORY COURSEWORK (27-31 units): Plan to complete these by the end of sophomore year.

	Course	Units	Qtr(s) Offered	Year	Prerequisites & Enrollment Restrictions
☐	MAT 21A (Calculus: Differential Calculus)	4	F W S SSI SSII		Math placement exam score of 35 or higher (& 3 or higher on trig subscore)
☐	MAT 21B (Calculus: Integral Calculus)	4	F W S SSI SSII		21A or 21AH with C- or above; or 17A with B or above
☐	MAT 21C (Calculus: Partial Derivatives & Series)	4	F W S SSI SSII		21B, 21BH, 16C, or 17C with a C- or above; or 17B with a B or above
☐	MAT 21D (Vector Analysis)	4	F W S SSI SSII		21C or 21CH with a C- or above; or 17C with a B or above
☐	*Choose between (22A/27A and 108) or 67:*				
	☐ MAT 22A (Linear Algebra) **OR**	3	F W S SSI SSII		21C or 21CH with a C- or above; AND ENG 6 or concurrent enrollment in 22AL
	MAT/BIS 27A (Linear Algebra w/ Applications to Bio)	4	W		17C or 21C or 21CH C- or above
	☐ **AND** MAT 108 (Intro to Abstract Math)	4	F W S SSI SSII		21B (but not recommended until you complete 21C)
	☐ **OR** MAT 67 (Modern Linear Algebra)**	4	W		21C or 21CH with a C- or above. *See note below.*
☐	MAT 22B (Differential Equations) **OR**	3	F W S SSI SSII		22/27A or 67 with C- or above
	MAT/BIS 27B (Differential Equations w/ Applications to Bio)	4	S		27A C- or above; or 22A C- or above AND (22AL or ENG 6 OR EME 5 C- or above)
☐	ENG 6 (Engineering Problem Solving)	4	F W S SSII		16A, 17A, or 21A, C- or above; AND 16B, 17B, or 21B with a C- or above (may be taken concurrently)
☐	ECS 32A (Intro to Programming)***	4	F W S		Please wait to take this class until after your first quarter.

Information above is subject to change, based on changes to course offerings, prerequisites, etc.

NOTES

** MAT 67 is a more abstract, rigorous version of 22A and 108. Recommended if you earn all A's in MAT 21ABC and like theory.

***ECS 32A can be replaced by ECS 10, 30, 40, 32B, 34, 36A, 36B, or 36C.

DEPTH COURSEWORK (51 units): Plan to complete these during your junior and senior years.

	Course	Units	Qtr(s) Offered	Year	Prerequisites & Enrollment Restrictions
☐	MAT 127A (Real Analysis)	4	F W S SSI		21C; and (22/27A and 108) or 67
☐	MAT 127B (Real Analysis)	4	F W S SSII		127A
☐	MAT 127C (Real Analysis)	4	F W S SSI		127B
☐	MAT 128A (Numerical Analysis)	4	F W SSII		21C and (ECS 32A or ENG 6)
☐	MAT 128B (Numerical Analysis in Solution of Equations)	4	W		21C and 22/27A and (ECS 32A or ENG 6)
☐	MAT 128C (Numerical Analysis in Differential Equations)	4	S		21C and 22/27A and 22/27B and (ECS 32A or ENG 6)
☐	MAT 135A (Probability)	4	F W S SSI		21C; and (108 or 127A)
☐	MAT 150A (Modern Algebra)	4	F W SSI		(22/27A and 108) or 67
☐	MAT 124 (Mathematical Biology)	4	S (even yrs)		22/27B; (22/27A or 67)
☐	Enrichment Class (MAT 111 - 185B, excluding 180)	4	See below for more information about Enrichment options.		
☐	Enrichment Class (MAT 111 - 185B, excluding 180)	4			
☐	Biology Class	4	See below for more information about Computation Class options.		
☐	Capstone	3	See below for more information about Capstone options.		

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ENRICHMENT CLASSES

You are required to take 2 Enrichment Classes. Enrichment classes are any class from **MAT 111 through MAT 185B**, **excluding MAT 180 and any core classes** (e.g. MAT 127ABC, 135A).

- *See catalog.ucdavis.edu/programs/MAT/MATcourses.html for a list of all possible Math Enrichment classes & their prereqs. Pick ones that look interesting!*
  Note: your faculty advisor can also help with this. Find their contact info here: https://www.math.ucdavis.edu/undergrad/advising/advisers/
- *Find out when the classes you're interested in are offered:*
  - Academic Year: https://www.math.ucdavis.edu/courses/academic-schedule - Summer: https://www.math.ucdavis.edu/courses/summer

BIOLOGY CLASS

Choose any 1 of the following: **ECS 124, 129, 170; EVE 101, 102, 175; EBS 130; ESP 121; MCB 121, 161 162; NPB 105, 163/198**

- *See catalog.ucdavis.edu to learn more about each of these classes. Note that they have prerequisites. Plan accordingly.*

CAPSTONE

You are required to complete 1 of the following options before graduation (typically in your last year).

- One of the in-depth math courses: **MAT 115B, 118B, 119B, 135B, 146, 150B, 150C, or 185B.**
- **MAT 180** (Special Topics class). Offered F, W, S. Topic changes every quarter: https://www.math.ucdavis.edu/courses/syllabi/special-topics/
- **MAT 189** (Advanced Problem Solving). Offered irregularly (usually spring). Project-based class with written and verbal presentations.
- **MAT 192** (Internship in Applied Math). Requires faculty advisor approval and 90 hours of internship. You must find internship; ICC can help.
- **MAT 194** (Undergrad Thesis). Requires that you find a faculty member who will work with you. 2 quarter commitment minimum. https://www.math.ucdavis.edu/undergrad/research/thesis/