

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

SAMPLE SCHEDULE

YEAR 1	YEAR 2
<u>FALL QUARTER</u> : MAT 21A	<u>FALL QUARTER</u> : MAT 21D, ECS 32A
<u>WINTER QUARTER</u> : MAT 21B	WINTER QUARTER: MAT 22/27A, MAT 108
<u>SPRING QUARTER</u> : MAT 21C, ENG 6	SPRING QUARTER: MAT 22/27B, MAT 127A
YEAR 3	YEAR 4
<u>FALL QUARTER</u> : MAT 127B, MAT 168	<u>FALL QUARTER</u> : MAT 150A, MAT 128A
<u>WINTER QUARTER</u> : MAT 127C, MAT 135A	<u>WINTER QUARTER</u> : MAT 128B, 1 Enrichment class
<u>SPRING QUARTER</u> : 1 Enrichment class, 1 computation class	<u>SPRING QUARTER</u> : 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
<input type="checkbox"/> 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)
<input type="checkbox"/> MAT 21B (Calculus: Integral Calculus)	4	F W S SSI SSII		21A or 21AH with C- or above; or 17A with B or above
<input type="checkbox"/> 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
<input type="checkbox"/> 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
<input type="checkbox"/> Choose between (22A/27A and 108) or 67:				
<input type="checkbox"/> MAT 22A (Linear Algebra) <u>OR</u>	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
<input type="checkbox"/> <u>AND</u> MAT 108 (Intro to Abstract Math)	4	F W S SSI SSII		21B (but not recommended until you complete 21C)
<input type="checkbox"/> <u>OR</u> MAT 67 (Modern Linear Algebra)**	4	W		21C or 21CH with a C- or above. <i>See note below.</i>
<input type="checkbox"/> MAT 22B (Differential Equations) <u>OR</u>	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)
<input type="checkbox"/> 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)
<input type="checkbox"/> 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
<input type="checkbox"/> MAT 127A (Real Analysis)	4	F W S SSI		21C or 21CH; and (22/27A and 108) or 67
<input type="checkbox"/> MAT 127B (Real Analysis)	4	F W S SSII		127A
<input type="checkbox"/> MAT 127C (Real Analysis)	4	F W S SSI		127B
<input type="checkbox"/> MAT 128A (Numerical Analysis)	4	F W SSII		21C and (ECS 32A or ENG 6)
<input type="checkbox"/> MAT 128B (Numerical Analysis in Solution of Equations)	4	W		21C and 22/27A and (ECS 32A or ENG 6)
<input type="checkbox"/> MAT 128C (Numerical Analysis in Differential Equations)	4	S		21C and 22/27A and 22/27B and (ECS 32A or ENG 6)
<input type="checkbox"/> MAT 135A (Probability)	4	F W S SSI		21C; and (MAT 108 or MAT 127A)
<input type="checkbox"/> MAT 150A (Modern Algebra)	4	F W SSI		(22/27A and 108) or 67
<input type="checkbox"/> MAT 168 (Optimization)	4	F W		(22A and 108) or 67; 21C
<input type="checkbox"/> Enrichment Class (MAT 111 - 185B, excluding 180)	4	See below for more information about Enrichment options.		
<input type="checkbox"/> Enrichment Class (MAT 111 - 185B, excluding 180)	4			
<input type="checkbox"/> Computation Class	4			
<input type="checkbox"/> 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>

COMPUTATION CLASS

Choose any 1 of the following: **ATM 120; ECS 36C, 60, 120, 122A, 122B, 124, 129, 130, 170, 175; NPB 105, 163/198; STA 141A**

◦ 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/>