

Mathematical Analytics and Operations Research (B.S.)

SAMPLE SCHEDULE

YEAR 1	YEAR 2
FALL QUARTER: MAT 21A	FALL QUARTER: MAT 21D, ENG 6
WINTER QUARTER: MAT 21B, ECN 1A	WINTER QUARTER: MAT 22/27A, MAT 108
SPRING QUARTER: MAT 21C, ECN 1B	SPRING QUARTER: MAT 22/27B, MAT 127A
YEAR 3	YEAR 4
FALL QUARTER: MAT 127B, STA 32, Enrichment B	FALL QUARTER: MAT 150A, MAT 128A
WINTER QUARTER: MAT 127C, MAT 135A	WINTER QUARTER: MAT 168, Enrichment A, Enrichment B
SPRING QUARTER: MAT 135B, MAT 167 or Enrichment A	SPRING QUARTER: MAT 160, Capstone

2020-2021 Requirements

PREPARATORY COURSEWORK (39-43): 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. <i>See note below.</i>
☐ 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)
☐ Choose between ENG 6 or (ECS 32A and MAT 22AL):					
☐ ENG 6 (Engineering Problem Solving), OR	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)
☐ MAT 22AL (MATLAB) AND	1	F W S	SSI SSII		16C, 17C, or 21CH
☐ ECS 32A (Intro to Programming)***	4	F W S			Please wait to take this class until after your first quarter.
☐ ECN 1A (Microeconomics)	4	F W S	SSI SSII		
☐ ECN 1B (Macroeconomics)	4	F W S	SSI SSII		
☐ STA 32 OR STA 100	4				

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 or 21CH; 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 135A (Probability)	4	F W S SSI		21C; and (MAT 108 or MAT 127A)
☐ MAT 135B (Stochastic Processes)	4	S		135A
☐ Choose any <u>1</u> of the following classes:	4			
☐ 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 22B and (ECS 32A or ENG 6)
☐ MAT 150A (Modern Algebra)	4	F W SSI		(22/27A and 108) or 67
☐ MAT 170 (Math for Data Analytics & Decision Making)	4	S		167
☐ MAT 168 (Optimization)	4	F W		(22/27A and 108) or 67; 21C
☐ Enrichment A (e.g. MAT 167)	4	See below for more information about Enrichment A options.		
☐ Enrichment A	4			
☐ Enrichment B	4			
☐ Enrichment B	4	See below for more information about Enrichment B options.		
☐ Capstone	3			

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

ENRICHMENT A OPTIONS

You are required to take 2 Enrichment A Classes. Approved Enrichment A classes include the following: any class from **MAT 111 through MAT 185B (excluding MAT 180 and any core classes); STA 131B, 131C, 137, 141A, 141B, 141C.**

◦ 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>

ENRICHMENT B OPTIONS

You are required to take 2 Enrichment B Classes. Approved Enrichment B classes include the following: **ECN 100A, 100B, 121A, 121B, 122, 134; ARE 100A, 100B, 155, 156, 157.**

◦ 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, 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/>