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## MATHEMATICS: MATHEMATICS FOR ECONOMICS AND FINANCE

#### REQUIREMENTS

### REQUIREMENTS

The Mathematics Major with Economics and Finance focus requires 10 distinct courses for at least 30 credits as described below. Note that while some courses may be used to fulfill more than one requirement it is still considered only a single course and may only contribute once to the total course count. Finally, at most one course from each of the following groupings may be used to fulfill the minimum course and credit requirement (i.e.: minimum of ten courses and at least 30 credits): Intro Linear Algebra (MATH 320, MATH 340, MATH 341, MATH 375), Intro Differential Equations (MATH 319, MATH 320 or MATH 376), and Intro Probability (MATH/STAT 309 or MATH/STAT 431).

Code	Title Ci	redits			
Core Math Requirement (minimum of six distinct MATH courses for at least 18 credits) <sup>1</sup>					
Linear Algebra		3-5			
MATH 341	Linear Algebra				
or MATH 320	Linear Algebra and Differential Equations				
or MATH 340	Elementary Matrix and Linear Algebra				
or MATH 375	Topics in Multi-Variable Calculus and Linear Algebra				
Differential equations		0-5			
MATH 319	Techniques in Ordinary Differential Equations				
or MATH 320	Linear Algebra and Differential Equations				
or MATH 322	Applied Mathematical Analysis				
or MATH 376	Topics in Multi-Variable Calculus and Differen Equations	tial			
or MATH 415	Applied Dynamical Systems, Chaos and Mode	ling			
or MATH 519	Ordinary Differential Equations				
Intermediate Mathem one)	atics Requirement (complete at least	0-6			
MATH 321 & MATH 322	Applied Mathematical Analysis and Applied Mathematical Analysis				
MATH 341	Linear Algebra				
MATH 375	Topics in Multi-Variable Calculus and Linear Algebra				
MATH 421	The Theory of Single Variable Calculus				
Analysis Requirement					
MATH 521	Analysis I				
Electives to reach required six courses for at least 18 credits of MATH 6-					
At least one course must be selected from:					

	MATH/ COMP SCI	513	Numerical Linear Algebra			
	MATH/ COMP SCI	514	Numerical Analysis			
	MATH 519		Ordinary Differential Equations			
	MATH 522		Analysis II			
	MATH/		Linear Optimization			
	COMP SCI/ STAT 525	ISY E/				
	MATH 531		Probability Theory			
	MATH 535		Mathematical Methods in Data Science			
	MATH 540		Linear Algebra II			
	MATH 605		Stochastic Methods for Biology			
	MATH 616		Data-Driven Dynamical Systems, Stochastic Modeling and Prediction			
	MATH 619		Analysis of Partial Differential Equations			
	MATH 627		Introduction to Fourier Analysis			
	MATH 629		Introduction to Measure and Integration			
	MATH/I SY	E/	Introduction to Stochastic			
	OTM/STAT	632	Processes			
	MAI H 635		and Stochastic Calculus			
	Remaining c	ourses/	/credits may be from:			
	MATH/STAT	5 310	Introduction to Probability and Mathematical Statistics II			
	MATH 321		Applied Mathematical Analysis			
	MATH 322		Applied Mathematical Analysis			
	MATH 415		Applied Dynamical Systems, Chaos and Modeling			
	MATH 421		The Theory of Single Variable Calculus			
	MATH/ COMP SCI/ I SY E 425		Introduction to Combinatorial Optimization			
	MATH/STAT	431	Introduction to the Theory of Probability			
	or MATH, STAT 30	/ 9	Introduction to Probability and Mathematical Statistics I			
	MATH 443		Applied Linear Algebra			
	MATH 444		Graphs and Networks in Data Science			
	MATH/ COMP SCI/ STAT 475		Introduction to Combinatorics			
Economics/Finance Requirement (Four Courses						
alstinct from the above for at least 12 credits)						
эe		10110	Intermediate Microscopomic Theory	0-8		
	& ECON 312	2	- Advanced Treatment			
			and Intermediate Macroeconomic			
			Theory - Advanced Treatment			

ECON 301 & ECON 302	Intermediate Microeconomic Theory	
	and Intermediate Macroeconomic Theory	
ECON/ FINANCE 300 & ECON/ FINANCE 320	Introduction to Finance and Investment Theory	
Economics/Finance	Elective (choose at least two) <sup>2</sup>	6-8
ECON 400	Introduction to Applied Econometrics	
ECON 410	Introductory Econometrics	
ECON/A A E 421	Economic Decision Analysis	
ECON 435	The Financial System	
ECON 441	Analytical Public Finance	
ECON 442	Macroeconomic Policy	
ECON 448	Human Resources and Economic Growth	
ECON 450	Wages and the Labor Market	
ECON 451	The Economic Approach to Human Behavior	
ECON 455	Behavioral Economics	
ECON 458	Industrial Structure and Competitive Strategy	
ECON 460	Economic Forecasting	
ECON 461	International Macroeconomics	
ECON 464	International Trade	
ECON 468	Industrial Organization and Imperfect Competition	
ECON 475	Economics of Growth	
ECON/ FINANCE 503	Markets with Frictions	
ECON 521	Game Theory and Economic Analysis	
ECON/AAE 526	Quantitative Methods in Agricultural and Applied Economics	
ECON 621	Markets and Models	
ECON 661	Issues in International Macroeconomics	
ECON 664	Issues in International Trade	
ECON 666	Issues in International Finance	
FINANCE 305	Financial Markets, Institutions and Economic Activity	
FINANCE 325	Corporation Finance	
FINANCE 330	Derivative Securities	
FINANCE 340	Fixed Income Securities	
FINANCE/ INTL BUS 445	Multinational Business Finance	
Total Credits		30

# RESIDENCE AND QUALITY OF WORK

- 2.000 GPA on all MATH courses and courses eligible for the major.  $^{\rm 3}$
- 2.000 GPA on at least 15 credits of upper level credit in the major.<sup>4</sup>
- 15 credits in MATH in the major taken on the UW-Madison campus.<sup>5</sup>

#### FOOTNOTES

- <sup>1</sup> Some courses which follow may have prerequisites outside of the courses approved for this named option.
- <sup>2</sup> Any MATH course from the elective list above may be used in lieu of any of the following courses.
- <sup>3</sup> This includes any MATH courses (and those cross-listed with MATH) regardless of appearing in the tables above as well as only those non-MATH courses which are explicitly listed in the tables above.
- <sup>4</sup> This includes any MATH courses (and those cross-listed with MATH) numbered 307 and above, regardless of appearing in the tables above, as well as only those non-MATH course explicitly listed in the tables above which carry the advanced LAS designation.
- <sup>5</sup> This includes any MATH courses (and courses cross-listed with MATH) numbered 307 and above regardless of appearing in the tables above.