BS Mathematical Sciences
Applied Mathematics track- Fall 2022

This track will prepare students for graduate studies in applied mathematics or engineering. Graduates can also enter the work force in fields where analytical skills are needed such as jobs in statistics, actuarial sciences, finance, biotech, mathematics education.

Course Availability: This is when courses are typically offered and is subject to change:
F (Fall), S (Spring), SS (Summer) F = Fall, S = Spring, SS = Summer

Common Prerequisites (22-24 credits)

Complete all of the following with a grade of "C" or better (15 credits)

Course	Description	Pre-requisites	Term offered	Units
MAC 2311	Calculus I	Grade of "C" or higher in MAC 1147 or MAC 1140 + MAC 1114 (or placement score without prior coursework)	F, S, SS	4
MAC 2312	Calculus II	MAC 2311	F, S, SS	4
MAC 2313	Multivariable Calculus	MAC 2312	F, S, SS	4
MAP 2302	Differential Equations	MAC 2312	F, S, SS	3

Complete one of the following with a grade of "C" or better (3-4 credits):

Course	Description	Pre-requisites	Term offered	Units
COP 2210	Intro to Programming	MAC 1140 or MAC 1147 or MAC 2233 or MAC 2311	F, S, SS	4
COP 2250	Java Programming		F, S, SS	3

Complete one lecture with corresponding lab with a grade of "C" or better (4-5 credits):

Course	Description	Pre-requisites	Term offered	Units
BSC 2010	General Biology I	Co-requisite: BSC 2010L	F, S, SS	3
BSC 2010L	General Biology I Lab	Co-requisite: BSC 2010	F, S, SS	1
BSC 2011	General Biology II	Co-requisite: BSC 2011L	F, S, SS	3
BSC 2011L	General Biology II Lab	Co-requisite: BSC 2011	F, S, SS	1
CHM 1045	General Chemistry I	"C" grade or higher in MAC 1105 or appropriate placement score (if no prior coursework in Math/Chem) Co-requisite: CHM 1045L	F, S, SS	3
CHM 1045L	General Chemistry I Lab	Co-requisite: CHM 1045	F, S, SS	1
CHM 1046	General Chemistry II	Prerequisite: CHM 1045 Co-requisite: CHM 1046L	F, S, SS	3
CHM 1046L	General Chemistry II Lab	Co-requisite: CHM 1046	F, S, SS	1
PHY2048	Physics W/Calculus I	Pre- or Co-requisite: MAC 2311 Co-requisite: PHY 2048L	F, S, SS	4
PHY2048L	General Physics Lab I	Co-requisite: PHY 2048	F, S, SS	1
PHY2049	Physics W/Calculus II	Pre- or Co-requisite: MAC 2312 Prerequisite: PHY 2048 Co-requisite: PHY 2049L	F, S, SS	4
PHY2049L	General Physics Lab II	Co-requisite: PHY 2049	F, S, SS	1
GLY 1010	Physical Geology	N/A	F, S, SS	3
GLY 1010L	Physical Geology Lab	N/A	F, S, SS	1

Required Courses (37 credits)

Complete all of the following with a grade of "C" or better (22 credits)

Course	Description	Pre-requisites	Term offered	Units
MAS 3105	Linear Algebra	MAC 2312	F, S, SS	3
MAD 2104	Discrete Mathematics	MAC 1105 or appropriate placement score	F, S, SS	3

Course	Description	Pre-requisites	Term offered	Units
MAA 3200	Intro to Advanced Math	MAD 2104 and MAC 2312	F, S, SS	3
STA 4321	Mathematical Statistics I	MAC 2313	F	3
MAA 4211	Advanced Calculus I	MAC 2313, MAS 3105, and MAA 3200	S	3
MAD 3401	Numerical Analysis	COP 2210 or COP 2250 or COP 2270 or CGS 2420 and MAC 2312	F, S, SS	3
MAP 4104C	Topics in Math Modeling	MAP 2302, MAC 2313, MAS 3105	F	4

Complete one of the following with a grade of "C" or better (3 credits, Global Learning Discipline Specific):

Course	Description	Pre-requisites	Term offered	Units
IDS 4174	Mathematics and Philosophy in Arts- GL	N/A	F	3
MHF 3404	History of Mathematics- GL	MAC 2312	F	3
MHF 4401	Methods in the History of Modern Mathematics- GL	MAC 2313 and MAS 3105	S	3

Complete four courses from the following lists with a grade of "C" or better (12 credits)

Course	Description	Pre-requisites	Term offered	Units
MAD 4203	Intro to Combinatorics	MAC 2312 and MAD 2104	F	3
MAA 4402*	Complex Variables	MAC 2313 and MAP 2302 or MAA 4211	F	3
MAA 4212	Advanced Calculus II	MAA 4211	F	3
MAS 4301	Algebraic Structures	MAS 3105 and MAA 3200	S	3
MAS 4302	Topics in Algebraic Structures	MAS 4301	F, alt yrs	
MAP 4401	Advanced Differential Eqs	MAP 2302 and MAC 2313	S	3
MAD 3301	Graph Theory	COP 2210 or COP 2250 or COP 2270 or CGS 2420 and either MAS 3105 or MAD 2104	F, S, SS	3
STA 4322	Mathematical Statistics II	STA 4321	S	3
MAD 3512	Theory Algorithms	MAD 2104	F, S, SS	3
MHF 4102	Axiomatic Set Theory	MAA 3200 or instructor permission	S, alt yrs	3
MHF 4302	Mathematical Logic	MAA 3200 or MAD 3512	S, alt yrs	3
MAP 4634	Quantitative Risk Mgmt	MAC 2313, MAP 2302, MAS 3105	S, alt yrs	3
MAS 4203	Number Theory	MAA 3200 or MAS 3105 or MTG 2312	SS	3
MAP 4215	Stochastic Differential Eqns	MAP 2302, MAC 2313, MAS 3105, STA 4321	Consult advisor	3
MAP 4315	Nonlinear Dynamics w Applications to Sciences	MAC 2313 or MAP 2302 or MAS 3105, or permission of the instructor	Consult advisor	3
MAP 3253	Math Scientific Computation	MAC 2312, MAS 3105	Consult advisor	3
MAP 4412	Intro to Fourier Analysis	MAC 2313, MAS 3105	SS, alt yrs	3
MAA 4504	Functional Analysis	MAC 2313, MAS 3105	FS alt yrs	3
MAS 4310	Intro Algebraic Geometry	MAS 4301, MAA 4402	F, alt yrs	3
MTG 4254	Differential Geometry	MAC 2313, MAS 3105, MAP 2302 or permission from the instructor	S, alt yrs	3
MTG 4302	Topology	MAC 2313, MAS 3105, MAA 3200	SS	3

* Students wishing to go to graduate school in Mathematical Sciences are strongly advised to take MAA 4402

Graduation Requirements:

University Core Curriculum (UCC)	120 credit hours required for graduation
Minimum of a 2.0 GPA	Foreign Language requirement (FLENT/FLEX)
45 credits of Upper Division hours (3000-4000 level)	Global Learning (GL) requirement
Civics Literacy Requirement	

Students interested in Secondary Teacher Certification should contact the College of Arts, Sciences & Education Center for Advising & Student Success at (305) 348-2978