UCF Degree Programs

Mathematics (B.S.)

College of Sciences

Department of Mathematics,

Mathematical Sciences Building, Room: 207

http://math.ucf.edu

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Admission Requirements

None

Degree Requirements

- Students who change degree programs and select this major must adopt the most current catalog.
- Departmental Residency Requirement: at least 24 semester hours of regularly scheduled 3000-4000 level courses must be taken from the UCF Mathematics Department.
- Students must earn at least a "C" (2.0) in each course used to satisfy a requirement.
- Students must achieve a minimum cumulative GPA of 2.0 in all courses satisfying major requirements.
- Co-op or internship credit cannot be used in this major.
- Students should consult with a departmental advisor.
- All prerequisites of courses taught within the College of Sciences will be enforced.
- Courses designated in 1 (General Ed Program) and 2 (Common Program Prerequisites) are usually completed in the first 60 hours.
- All mathematics courses, except the following, must be either taken from, or approved by, the Department of Mathematics at UCF:

MAC 2311C	Calculus with Analytic Geometry I	4 hrs
MAC 2312	Calculus with Analytic Geometry II	4 hrs
MAC 2313	Calculus with Analytic Geometry III	4 hrs
MAP 2302	Ordinary Differential Equations I	3 hrs

Note: the following courses will not satisfy any Math degree requirements:

MTG 4212	Modern Geometries	4 hrs
MHF 4404	History of Mathematics	3 hrs

- 1. UCF General Education Program (GEP) (38 hrs)
- (Note: Certain courses must be selected for this major, bringing GEP hours above 36)
- Some concentrations require particular selections of courses in the GEP program. Please consult the desired concentration listed below.

A: Commu B: Cultural	(9 hrs) (9 hrs)		
C: Mathem Required	(7 hrs) 4 hrs		
Required	COP 3502C	Geometry I Computer Science I	3 hrs
D: Social F Required	(6 hrs) 3 hrs		
E: Science	Foundation	ed in GEP Program ns	3 hrs (8 hrs)
	Foundation	•	
E: Science Select one	Foundation EPHY 2048C	ns General Physics Using	(8 hrs)

2. Common Program Prerequisites (CPP) (11 hrs)

■ See "Common Prerequisites" in the Transfer and Transitions Services section for more information.

	See	Transfer	Notes f	or p	ossible	substitu	ıtions	of	certair
COL	reae								

COP 3502C	Computer Science I	GEP
MAC 2311C	Calculus with Analytic Geometry I	GEP
MAC 2312	Calculus with Analytic Geometry II	4 hrs
MAC 2313	Calculus with Analytic Geometry III	4 hrs
MAP 2302	Ordinary Differential Equations I	3 hrs

Select from the courses listed in the GEP 4 hrs **Program**

¹ CHM 2045C	Chemistry Fundamentals I or	GEP
BSC 2010C	Biology I or	GEP
PHY 2048C	General Physics Using Calculus I	GEP

¹ or the two semester equivalent CHM 2040/2041

3. Core Requirements: Basic Level (22 hrs)

- All courses specifically identified in the preceding Common Program Prerequisites section of this catalog are also required in the Basic Core, and must be taken.
- Selection of the Science sequence may need to reflect the student's track. Consult the requirements of the track before selecting the science sequence.
- The Mathematical Biology track requires all three of the CHM 2045C/2046/2047, the BSC 2010C/2011C, and the PHY 2048C/2049C sequences.
- The Engineering/Physics track requires the PHY 2048C/2049C sequence.

Core: Basic Requirements

COP 3502C	Computer Science I and	GEP/CPP
MAC 2311C	Calculus with Analytic Geometry I and	GEP/CPP
MAC 2312	Calculus with Analytic Geometry II and	CPP
MAC 2313	Calculus with Analytic Geometry III and	CPP
MAP 2302	Ordinary Differential Equations I	CPP

Core: Science Sequence:

Select from	4 hrs	
¹ CHM 2045C	Chemistry Fundamentals I and	GEP/CPP
CHM 2046	Chemistry Fundamentals II and	3 hrs
CHM 2046L	Chemistry Fundamentals Laboratory	1 hr

Or - BSC 2010C BSC 2011C	Biology I and Biology II	4 hrs GEP/CPP 4 hrs
Or - PHY 2048C PHY 2049C	General Physics Using Calculus I and General Physics Using Calculus II	4 hrs GEP/CPP 4 hrs

¹ or the two semester equivalent CHM 2040/2041

Core: Additional Requirements

18 hrs ■ Substitution of COT 3100 for MHF 3302 is possible with approval of Department Undergraduate Coordin

approvar or	Department Univergraduate C	Judi uli latui.
MAA 4226	Advanced Calculus I	4 hrs
MAS 3105	Matrix and Linear Algebra	4 hrs
MAS 3106	Linear Algebra	4 hrs
MAS 4301	Abstract Algebra I	3 hrs
MHF 3302	Logic and Proof in Mathematics	3 hrs

4. Core Requirements: Advanced Level

None

5. Restricted Electives

Students must select one of the following tracks

- Students must select one of the following that	JNO.
A. General Mathematics Track	18 hrs
Select 3 credit hour from 4000 or 5000 level courses	3 hrs
with an MAP or MAT prefix offered by the Department of	
Mathematics	
Select 3 credit hour from 4000 or 5000 level courses	3 hrs
with an MAA, MAD, MAS or MTG prefix offered by the	
Department of Mathematics, except MTG 4212.	
Select an additional 12 credits from 4000 or 5000 level	12 hrs
courses offered by the Department of Mathematics except	

MTG 4212 or MHF 4404.

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B Mathema	tical Biology Track	42 hrs	And select	9 credit hours from the following:	9 hrs
			COP 3402	Systems Software or	3 hrs
Track Prere		12 hrs			
BSC 2010C G	EP/CPP and		COP 4020	Programming Languages I or	3 hrs
BSC 2011C C	PP and		COT 4210	Discrete Structures II or	3 hrs
CHM 2045C C	SEP (Notes: or the two semester equivalent		COP 4331C	Processes for Object-Oriented Software	3 hrs
CHM 2040/20				Development or	
	,	0.1	COP 4600	/	3 hrs
CHM 2046	Chemistry Fundamentals II and	3 hrs		Operating Systems or	
CHM 2046L	Chemistry Fundamentals Laboratory and	1 hr	EEL 4768	Computer Architecture	3 hrs
PHY 2048C	General Physics Using Calculus I and	4 hrs			
PHY 2049C	General Physics Using Calculus II	4 hrs	E. Enginee	ring/Physics Track	42 hrs
20 . 0 0	contract thy close coming contract to		Track Prere	equisites:	
Take all of t	he following:	33 hrs		Physics for Engineers & Scientists I (GEP/	
				Thysics for Engineers & Scientists (GEF)	
CHM 2210	Organic Chemistry I and	3 hrs	CPP) or		
CHM 2211	Organic Chemistry II and	3 hrs	PHY 2049C F	Physics for Engineers and Scientists II (CPP)	
MAP 4484	Mathematical Biology I and	3 hrs		, ,	
STA 2023	Statistical Methods I and	3 hrs	Take all of	the following courses:	18 hrs
STA 4321	Statistical Theory I and	3 hrs	EGN 3321	Engineering Analysis-Dynamics and	3 hrs
STA 4322	Statistical Theory II and	3 hrs	MAA 4402	Introduction to Complex Variables and	3 hrs
•	000 level course with an MAP or MAT prefix	3 hrs	MAP 4103	Mathematical Modeling I and	3 hrs
offered by the	Department of Mathematics and		MAP 4303	Ordinary Differential Equations II and	3 hrs
Anv 4000 or 5	000 level course with an MAA, MAD, MAS	3 hrs	MAP 4341	Introduction to Partial Differential Equations	3 hrs
•	offered by the Department of Mathematics			and .	
•			PHY 3101	General Physics Using Calculus III	3 hrs
except MTG 4	212 and		FHT 3101	General Physics Osing Calculus III	3 1115
Select 9 credit	hours from lecture courses listed in the	9 hrs	0-144		0 1
restricted elec	tives within the Biology and/or Biomedical		Select 1:		3 hrs
	•		COT 4500	Numerical Calculus or	3 hrs
Sciences prog	rams.		EGN 3420	Engineering Analysis or	3 hrs
			MAP 4371	Numerical Methods for Differential	3 hrs
C. Mathema	tical Economics Track	36 hrs	1071		0 1110
Track Prere	anicitos:			Equations or	
			MAP 4384	Numerical Methods for Computational	3 hrs
ECO 2023 FII	nciples of Microeconomics (GEP)			Sciences or	
T-111 -64	la a Callanda an	00 1	PHZ 3151	Computer Methods in Physics	3 hrs
	he following:	30 hrs	1112 0101	Computer Methods III i Hysios	0 1110
ECO 2013	Principles of Macroeconomics and	3 hrs	Coloot 4.		3 hrs
ECO 3101	Intermediate Microeconomics and	3 hrs	Select 1:	F :	
ECO 3203	Intermediate Macroeconomics and	3 hrs	EGN 3310	Engineering Analysis-Statics or	3 hrs
ECO 3410	Mathematical Economics and	3 hrs	PHY 3220	Mechanics I	3 hrs
ECO 4412	Econometrics and	3 hrs	Select 1:		3 hrs
MAP 4113	Probability, Random Processes and	3 hrs	EGN 3343	Thermodynamics or	3 hrs
	Applications and		EGN 3358	Thermo-Fluids-Heat Transfer or	3 hrs
MAP 4640	Financial Mathematics and	3 hrs			
STA 2023	Statistical Methods I and	3 hrs	PHY 3513	Thermal and Statistical Physics	3 hrs
STA 4321	Statistical Theory I and	3 hrs	Select at le	ast 6 hours:	6 hrs
Select 3 credit	hours from 4000 or 5000 level courses	3 hrs	CES 4100C	Structural Analysis I and Lab or	4 hrs
with an MAA	MAD MAS or MTG prefix offered by the		EAS 3101	Fundamentals of Aerodynamics or	3 hrs
	·		EEL 3004C	Electrical Networks or	3 hrs
Department of	Mathematics except MTG 4212		EGM 3601	Solid Mechanics or	3 hrs
		• •			
	6 credit hours from the following:	6 hrs	EGN 3331C	Mechanics of Materials or	3 hrs
ECO 3703	International Microeconomics or	3 hrs	ESI 4312	Operations Research or	3 hrs
ECO 4504	Public Economics or	3 hrs	PHY 4604	Wave Mechanics I or	3 hrs
ECO 4713	International Macroeconomics or	3 hrs	PHY 4605	Wave Mechanics II	3 hrs
ECP 4303	Environmental and Natural Resource	3 hrs	1111 1000	Travo modilarios n	0 1110
ECF 4303		31115	Salact at la	ast 6 hours:	6 hrs
	Economics or				3 hrs
ECP 4403	Industrial Organization or	3 hrs	CWR 3201	Engineering Fluid Mechanics or	
STA 4322	Statistical Theory II	3 hrs	EAS 4105	Flight Mechanics or	3 hrs
OTT TOLL	Classical Thoory II	0 1110	EAS 4200	Analysis & Design of Aerospace Structures	3 hrs
D Computa	tional Track	39 hrs		or	
		30 1113	EAS 4400	Spacecraft Attitude Dynamics or	3 hrs
Track Prere					
COP 3502C C	Computer Science I (GEP)		EAS 4505	Orbital Mechanics or	3 hrs
	le e de llecole co	07.1	EEE 3342C	Digital Systems or	3 hrs
	he following:	27 hrs	EEL 3470	Electromagnetic Fields or	3 hrs
COP 3503C	Computer Science II and	3 hrs	EEL 3552C	Analog and Digital Communication	4 hrs
MAP 4303	Ordinary Differential Equations II and	3 hrs		Fundamentals or	
MAP 4341	Introduction to Partial Differential Equations		EEL 0057		0.1
IVIAI TOTI	· · · · · · · · · · · · · · · · · · ·	0 1113	EEL 3657	Linear Control Systems or	3 hrs
	and		EEL 3801C	Computer Organization or	3 hrs
MAP 4371	Numerical Methods for Differential	3 hrs	EEL 4742C	Embedded Systems or	4 hrs
	Equations and		EEL 4750	Digital Signal Processing Fundamentals or	3 hrs
MAP 4384	Numerical Methods for Computational	3 hrs	EEL 4832		3 hrs
IVIAI 4304	•	JIIIJ	EEL 4032	Engineering Applications of Computer	31115
	Sciences and			Methods or	
STA 2023	Statistical Methods I and	3 hrs	EEL 4851C	Engineering Data Structures or	4 hrs
STA 4321	Statistical Theory I and	3 hrs	EGN 3365	Structure and Properties of Materials or	3 hrs
	t hours from 4000 or 5000 level courses	3 hrs	EGN 3613	Engineering Economic Analysis or	2 hrs
		0 1110			
with an MAA,	MAD, MAS or MTG prefix offered by the		EIN 4333	Production and Distribution Systems or	3 hrs
	Mathematics except MTG 4212 and		EMA 4223	Fundamentals of Mechanical Behavior of	3 hrs
		3 hrs		Materials or	
	itional 3 credits from 4000 or 5000 level	21112	EMI 2060		2 hrs
courses offere	d by the Department of Mathematics except		EML 3262	Kinematics of Mechanisms or	3 hrs
for MTG 4212			EML 3701	Fluid Mechanics I or	3 hrs
III J 72 12	······· · · · · · ·		EML 4142	Heat Transfer or	3 hrs
			EML 4225	Introduction to Vibrations and Controls or	3 hrs
			EML 4313	Intermediate System Dynamics and	3 hrs
			LIVIL TO IO		5 1115
				Controls or	

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EML 4703	Fluid Mechanics II or	3 hrs
ENV 4561	Advanced Environmental Engineering	3 hrs
	Operations & Processes or	
ESI 4234	Quality Engineering or	3 hrs
ESI 4523	Systems Simulation or	3 hrs
PHY 3323	Electricity and Magnetism I or	3 hrs
PHY 4324	Electricity and Magnetism II or	3 hrs
STA 4321	Statistical Theory I or	3 hrs
STA 4322	Statistical Theory II	3 hrs
Select 1:		3 hrs
MAD 4203	Introduction to Combinatorics or	3 hrs
MAD 4301	Introduction to Graph Theory	3 hrs

6. Capstone Requirements

None

7. Foreign Language Requirements

Admissions

■ Two years high school or one year college language (or equivalent proficiency exam) prior to graduation.

Graduation

None

8. Electives

 Select primarily from upper level courses, with departmental advisor's approval. May be outside of the department.

9. Additional Requirements

None

10. Required Minors

None

11. Departmental Exit Requirements

- Earn a grade of "C" (2.0) or better in each course used to satisfy the degree program.
- Students must achieve a minimum cumulative GPA of 2.0 in all courses satisfying major requirements.
- Participate in an exit interview.
- Fulfill Exit Examination requirement.

12. University Minimum Exit Requirements

■ A 2.0 UCF GPA

- 60 semester hours earned after CLEP awarded
- 48 semester hours of upper division credit completed
- 30 of the last 39 hours of course work must be completed in residency at UCF.
- A maximum of 45 hours of extension, correspondence, CLEP, Credit by Exam, and Armed Forces credits permitted.
- Complete the General Education Program, the Gordon Rule, and nine hours of Summer credit.

Total Semester Hours Required

120

Honors In Major

- Application and admission through the Department and the Burnett Honors College.
- Fulfill University requirements for Honors in the Major.

Related Programs

- Aerospace Engineering
- Biology
- Biomedical Sciences
- Chemistry
- Computer Science
- Economics
- Electrical Engineering
- Industrial Engineering
- Mathematics Education
- Mechanical Engineering
- Physics
- Statistics

Certificates

None

Related Minors

- Actuarial Science
- Bioengineering
- Biology
- Biomedical Sciences
- Chemistry
- Computer Science
- Economics
- Education
- Environmental Studies
- Information Technology
- Mathematics
- Mathematics Education
- Physics
- Statistics
- Technological Entrepreneurship

Advising Notes

■ Students with adequate preparation can consult with the department undergraduate advisor on substituting graduate classes for departmental electives.

Transfer Notes

- Lower division courses do not substitute for upper division courses.
- Courses transferred from private and out-of-state schools must be evaluated for equivalency credit. The student must provide all supporting information.

Acceptable Substitutes for Transfer Courses

- The following substitutions are acceptable for common program prerequisites if taken as part of the AA course work prior to transferring to UCF:
- Computer Programming: may use any programming course with a COP prefix.
- Laboratory Science: may use any GLY, PHY, CHM or BSC course with a lab designed for science majors; however, the biology, chemistry and physics classes are core requirements and still must be taken.

Plan of Study

- This is one of numerous possible plans of study. See program description for all requirements. Consult a departmental advisor for alternate, new or more appropriate selections.
- Although all classes are listed as being taken during the academic year, you may be required to complete 9 hours of them during the Summer. Consult with an advisor to determine if you are exempt.
- Prior to enrolling in Chemistry, take Chemistry Placement Test ~

http://knightsource.sdes.ucf.edu/placement

- Prior to enrolling in Math, take Math Placement Test
 ~http://utc.sdes.ucf.edu
- Below Plan of Study designed to pursue graduate study.

Freshman Y	ear - Fall	17 hrs
MAC 2311C	Calculus with Analytic Geometry I	4 hrs
ENC 1101	Composition I	3 hrs
BSC 2010C	Biology I	4 hrs
ECO 2023	Principles of Microeconomics	3 hrs
EUH 2000	Western Civilization I	3 hrs
Freshman Y	16 hrs	
MAC 2312	Calculus with Analytic Geometry II	4 hrs
MHF 3302	Logic and Proof in Mathematics	3 hrs
ENC 1102	Composition II	3 hrs
EUH 2001	Western Civilization II	3 hrs
PHI 2010	Introduction to Philosophy	3 hrs
Sophomore Year - Fall		17 hrs
MAC 2313	Calculus with Analytic Geometry III	4 hrs
MAS 3105	Matrix and Linear Algebra	4 hrs
COP 3502C	Computer Science I	0.1
	Computer Science i	3 hrs
PHY 2048C	General Physics Using Calculus I	3 nrs 4 hrs
PHY 2048C SPC 1603C		
SPC 1603C	General Physics Using Calculus I Fundamentals of Technical Presentations	4 hrs 3 hrs
SPC 1603C	General Physics Using Calculus I Fundamentals of Technical Presentations Year - Spring	4 hrs
SPC 1603C Sophomore	General Physics Using Calculus I Fundamentals of Technical Presentations Year - Spring Ordinary Differential Equations I	4 hrs 3 hrs 14 hrs
SPC 1603C Sophomore MAP 2302	General Physics Using Calculus I Fundamentals of Technical Presentations Year - Spring Ordinary Differential Equations I Linear Algebra	4 hrs 3 hrs 14 hrs 3 hrs
SPC 1603C Sophomore MAP 2302 MAS 3106	General Physics Using Calculus I Fundamentals of Technical Presentations Year - Spring Ordinary Differential Equations I	4 hrs 3 hrs 14 hrs 3 hrs 4 hrs

Junior Year MAD 4203 MAP 4303 MAP 4384	- Fall Introduction to Combinatorics Ordinary Differential Equations II Numerical Methods for Computational Sciences	15 hrs 3 hrs 3 hrs 3 hrs
Elective Elective		3 hrs 3 hrs
Junior Year MAD 4301 MAA 4402 MAP 4371	Introduction to Graph Theory Introduction to Complex Variables Numerical Methods for Differential	14 hrs 3 hrs 3 hrs 3 hrs
Elective Elective	Equations	3 hrs 2 hrs
Senior Year MAA 4226 MAP 4153 MAP 4341 MAP 4903H MAS 4301	- Fall Advanced Calculus I Vector and Tensor Analysis Introduction to Partial Differential Equations Honors Directed Reading I Abstract Algebra I	14 hrs 4 hrs 3 hrs 3 hrs 1 hr 3 hrs
Senior Year MAA 4227 MAP 4970H MAS 4302 MTG 4254 MTG 4302	- Spring Advanced Calculus II Undergraduate Honors Thesis Abstract Algebra II Introduction to Differential Geometry Introduction to Topology	13 hrs 3 hrs 1 hr 3 hrs 3 hrs 3 hrs

Program Academic Learning Compacts

■ Program Academic Learning Compacts (student learning outcomes) for undergraduate programs are located at: http://www.oeas.ucf.edu/alc/academic_learning_compacts.htm