

UCF Degree Programs

MATHEMATICS - ENGINEERING/PHYSICS TRACK (B.S.)

College of Sciences

Department of Mathematics, MAP 207, 407-823-6284

<http://math.ucf.edu>

E-mail: math@mail.ucf.edu

Contact: H. Martin, MAP 215A, 407-823-5700,

E-mail: martin@math.ucf.edu

The Department of Mathematics offers courses identified by a suffix of H for students in the Honors Program; e.g., MAC 2311H, MAC 2312H, MAC 2313H, and MAP 2302H.

Admission Requirements

none

Degree Requirements

- Students who change degree programs and select this major must adopt the most current catalog.
- All mathematics courses except MAC 2311, MAC 2312, MAC 2313 and MAP 2302 must either be taken from, or approved by, the Department of Mathematics at UCF.
- 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 required course.
- Co-op or internship credit cannot be used in this major.
- Students should consult with a departmental advisor.
- Courses designated in sections 1 (General Education Program) and 2 (Common Program Prerequisites) are usually completed in the first 60 hours.

1. UCF General Education Program (36+2 hrs)

(Note: Certain courses must be selected for this major, bringing GEP hours above 36)

A. Communication Foundations	9 hrs
B. Cultural and Historical Foundations	9 hrs
C. Mathematical Foundations	
1. Select MAC 2311	4 hrs
2. Select COP 3502C	3 hrs
D. Social Foundations	6 hrs
E. Science Foundations	
1. Select PHY 2048 & L	4 hrs
2. Select a listed course	3 hrs

2. Common Program Prerequisites (15 hrs)

COP 3223*	Intro to Programming with C	3 hrs
MAC 2311	Calculus with Analytic Geo I	GEP
MAC 2312	Calculus with Analytic Geo II	4 hrs
MAC 2313	Calculus with Analytic Geo III	4 hrs
PHY 2048*L	Physics for Sci & Eng I w/lab	GEP
PHY 2049*L	Physics for Sci & Eng II w/lab	4 hrs

*See Transfer Notes for possible substitutes

See "Common Prerequisites" in the Transfer and Transitions Services section (pg. 46) for more information.

3. Basic Core Requirements (6 hrs)

COP 3502C	Computer Science I	GEP
PHY 2048&L	Physics for Sci & Eng I w/lab	GEP
PHY 2049&L	Physics for Sci & Eng II w/lab	CPP
MAP 2302	Differential Equations	3 hrs
Select one course		3 hrs
STA 3032	Prob. & Stats for Engineers	
STA 2023	Statistical Methods I	

4. Advanced Core Requirements (53 hrs)

Select one course		3 hrs
MHF 3302	Logic and Proof in Mathematics	
COT 3100C	Intro to Discrete Structures	
Select one course		3 hrs
MAP 4103	Mathematical Modeling I	
EML 3034	Modeling Meth in Mech. & Aero Eng	
PHZ 3151	Computer Methods in Physics	
MAP 4153	Vector and Tensor Analysis	3 hrs
MAP 4307	Appl of Complex Variables	3 hrs
MAP 4363	Appl Boundary Value Prob I	3 hrs
MAP 4364	Appl Boundary Value Prob II	3 hrs
MAA 4226	Advanced Calculus I	4 hrs
EGN 3321	Engineering Analysis - Dynamics	3 hrs
Select one course		3 hrs
EGN 3420	Engineering Analysis	
COT 4500	Numerical Calculus	

Select one course		3-4 hrs
MAS 3106	Linear Algebra	
MAD 4203	Applied Combinatorics	
Select one course		3 hrs
EGN 3310	Engineering Analysis - Statics	
PHY 3220	Mechanics I	
Select one course		3 hrs
EGN 3373	Principles of Electrical Engineering	
PHY 3101	Physics for Eng & Sci III	
Select one course		3 hrs
CHM 2046	Chemistry Fundamentals II	
or any MAA, MAD, MAP, MAS, or MTG course at 3000 level or above		
Select one course		3 hrs
EGN 3358	Thermo-Fluids-Heat Transfer	
PHY 3513	Thermal & Statistical Physics	
or any MAA, MAD, MAP, MAS, or MTG course at 3000 level or above		
Select one course		3 hrs
EML 3701	Fluid Mechanics	
CWR 3201	Engineering Fluid Mechanics	
PHY 3101	Physics for Eng & Sci III	
(PHY 3101 may be selected only if EGN3373 is also taken)		
ESI 4628C	Industrial Engr Applications of Computers	
PHZ 3113	Intro. to Theoretical Methods of Physics	
or any MAA, MAD, MAP, MAS, or MTG course at 3000 level or above		
Select one course		3 hrs
EGN 3331	Mechanics of Materials	
CHM 2046	Chemistry Fundamentals II	
ESI 4312	Operations Research	
EGM 3601	Solid Mechanics	
EML 4220	Vibration Analysis	
EEL 3004	Electrical Networks	
PHY 4604	Wave Mechanics I	
or any MAA, MAD, MAP, or MAS course at 3000 level or above		
Select one course		3 hrs
CES 4100C	Structural Analysis I	
EGN 3331	Mechanics of Materials	
EIN 3000	Intro. to Indust. Eng. & Mngmnt Sys	
EAS 3101	Fundamentals of Aerodynamics	
EGM 3601	Solid Mechanics	
EEL 3004	Electrical Networks	
or any PHY, PHZ, AST, MAA, MAD, MAP, or MAS course at 3000 level or above		

5. Restricted Electives (6 hrs)

Select two courses		
STA 4321	Statistical Theory I	3 hrs
STA 4322	Statistical Theory II	3 hrs
PHY 3323	Electricity & Magnetism I	3 hrs
PHY 4324	Electricity & Magnetism II	3 hrs
EGN 3365	Structure & Property of Materials	3 hrs
EGN 3613	Engineering Economic Analysis	2 hrs
EEE 3342C	Intro. to Digital Circuits and Systems	3 hrs
EEL 3801	Intro. to Computer Engineering	3 hrs
EEL 3657	Linear Control Systems	3 hrs
EML 4142	Heat Transfer	3 hrs
EML 4312C	Feedback Control	3 hrs
EML 3262	Kinematics of Mechanisms	3 hrs
EAS 4200	Flight Structures	3 hrs
EAS 4400	Spacecraft Attitude Dynamics	3 hrs
EAS 4505	Orbital Mechanics	3 hrs
EAS 4105	Flight Mechanics	3 hrs
EML 4703	Fluid Mechanics II	3 hrs
EMA 4223	Fund. of Mechanical Behavior of Materials	3 hrs
CWR 4203C	Hydraulics	3 hrs
CWR 4101C	Hydrology	3 hrs
ENV 4561	Environmental Eng - Process Design	4 hrs
ESI 4234	Quality Engineering	3 hrs
ESI 4523C	Systems Simulation	3 hrs
EIN 4333C	Industrial Control Systems	3 hrs
EEL 3470	Electromagnetic Fields	3 hrs
EEL 3552C	Analog & Digital Communication Fund.	4 hrs
EEL 4750	Digital Signal Processing Fund.	3 hrs
EEL 4767C	Computer System Design I	4 hrs
EEL 4832	Eng. Applications of Computer Models	3 hrs
EEL 4851C	Engineering Data Structures	4 hrs
or any MAA, MAD, MAP, or MAS course at 3000 level or above		

6. Departmental Exit Requirements

- Earn a grade of "C" (2.0) or better in each course required in the degree program (sections 2-5 above).
- Participate in an exit interview.
- Computer Competency met by EGN 3420 or COP 3502C.
- Before applying to graduate, the CLAST must be completely satisfied.

7. Foreign Language Requirements

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

Graduation: none

8. Electives (variable)

Students desiring a double major in Engineering or Physics and Mathematics must also complete all requirements of both majors. Students should select electives which satisfy both majors simultaneously when possible.

9. 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 36 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, the CLAST, and nine hours of Summer credit (if applicable)

Total Semester Hours Required 120 hrs

Related Programs: Applied Mathematics, Computer Science, Engineering, Math Education, Statistics

Related Minors: Applied Computer Science, Computer Science, Engineering, Math, Physics, Statistics

Transfer Notes:

- Lower division courses taken at community colleges 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 common program prerequisites if taken prior to transferring to UCF:

- COP 3223*: may use any programming language course with a COP prefix.
- PHY 2048* & PHY 2049 with labs: may use any PHY, CHM or BSC course with a lab designed for science majors; however, PHY 2048 & PHY 2049 with labs are core requirements and still must be taken.

Program Academic Learning Compacts

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