

UCF Degree Programs

Biotechnology (B.S.)

College of Medicine

Burnett School of Biomedical Sciences

Health and Public Affairs II, Room: 335

<https://med.ucf.edu/biomed/>

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The Biotechnology B.S. produces highly trained workers that will meet the workforce needs of the biotechnology industry. Students seeking admission to professional schools (medical, dental, optometry, veterinary, podiatry, and pharmacy) will meet most of the admission requirements for those programs while obtaining a Biotechnology B.S. degree.

Admission Requirements

- None

Degree Requirements

- Students who change degree programs and select this major must adopt the most current catalog
 - Students should complete the General Education Program before transferring within the Florida College System or State University System.
 - Students should consult with a BSBS academic advisor at least once per semester.
 - Courses designated in section 1 below may be taken at a Florida College System institution, and should usually be completed in the first 60 hours
 - Grades below "C" in Common Program
- Prerequisites, Core Requirements and Restricted Electives will not be accepted.

1. UCF General Education Program (GEP) (36 hrs)

A: Communication Foundations

Required	ENC 1101	Composition I	3 hrs
Required	ENC 1102	Composition II	3 hrs
Prefer	SPC 1603C	Fundamentals of Technical Presentations	3 hrs

B: Cultural & Historical Foundations (9 hrs)

C: Mathematical Foundations

Required	STA 2023	Statistical Methods I	3 hrs
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Select 1: (4 hrs)

Required	MAC 2311C	Calculus with Analytic Geometry I or	4 hrs
Required	MAC 2253	Applied Calculus	3 hrs

D: Social Foundations (6 hrs)

E: Science Foundations

Required	CHM 2045C	Chemistry Fundamentals I	4 hrs
Required	BSC 2010C	Biology I	4 hrs

2. Common Program Prerequisites (CPP) (21 hrs)

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

BSC 2010C	Biology I	GEP	
¹ BSC 2011C	Biology II	4 hrs	
² CHM 2045C	Chemistry Fundamentals I	GEP	
CHM 2046	Chemistry Fundamentals II	3 hrs	
CHM 2210	Organic Chemistry I	3 hrs	
CHM 2211	Organic Chemistry II	3 hrs	
STA 2023	Statistical Methods I	GEP	
MAC 2311C	Calculus with Analytic Geometry I	GEP	
PHY 2053C	College Physics I	4 hrs	
PHY 2054C	College Physics II	4 hrs	

¹ This course is substituted with BSC 3403C.

² See Transfer Notes for possible substitutions.

3. Core Requirements: Basic Level

- None

4. Core Requirements: Advanced Level (52 hrs)

Life Sciences

MCB 3020C	General Microbiology	5 hrs
PCB 3522	Molecular Biology I	3 hrs
PCB 4524	Molecular Biology II	3 hrs
BSC 3403C	Quantitative Biological Methods	4 hrs
MCB 4721C	Methods in Biotechnology	4 hrs
MCB 4720	Industrial Perspectives Seminar	3 hrs
MCB 4312	Molecular Biotechnology	3 hrs
PCB 4135	Applied Molecular Cell Biology	3 hrs
PCB 4174	Foundation of Bio-Imaging Science	3 hrs

Select one of the following sequences of courses:

PCB 4280	Molecular Immunology and	3 hrs
PCB 3233L	Immunology Laboratory	1 hr

or

PCB 3233	Immunology and	3 hrs
PCB 3233L	Immunology Laboratory	1 hr

Select 1:

MCB 4414	Microbial Metabolism or	3 hrs
MCB 4410	Cellular Metabolism	3 hrs

Chemistry

BCH 4053	Biochemistry I	3 hrs
CHM 2046L	Chemistry Fundamentals Laboratory	1 hr
CHM 2211L	Organic Laboratory Techniques I	2 hrs

Physics

Select one of the following sequences of courses:

PHY 2053C	College Physics I and	4 hrs
PHY 2054C	College Physics II	4 hrs

or

PHY 2048C	General Physics Using Calculus I and	4 hrs
PHY 2049C	General Physics Using Calculus II	4 hrs

Math

Select 1: (3 hrs)

MAC 2311C	Calculus with Analytic Geometry I or	GEP
MAC 2253	Applied Calculus	GEP

5. Restricted Electives (6 hrs)

- Two courses minimum, no more than one may be taken outside the Burnett School of Biomedical Sciences. Each graduate must complete 3 credits of MCB 4912 or MCB 4970H or serve an internship. Only three hours of Honors thesis or undergraduate research will count toward the restrictive elective requirement.

- Those students who do not qualify for MCB 4970H may elect MCB 4912 Undergraduate Research as a substitute course, but a research report must be submitted to instructor after completion of research project.

BCH 4054	Biochemistry II	3 hrs
BCH 4103L	Biochemical Methods	2 hrs
¹ MCB 3203	Pathogenic Microbiology	3 hrs
MCB 4404	Bacterial Genetics and Physiology	3 hrs
MCB 4207	Infectious Processes	3 hrs
MCB 4204	Cellular Microbiology: Host-Pathogen Interactions	3 hrs
PCB 4284	Immunobiology	3 hrs
MCB 4503C	Virology	3 hrs
MCB 4603	Environmental Microbiology	3 hrs
MCB 4912	Directed Independent Research	3 hrs
MCB 4970H	Honors Undergraduate Thesis II	3 hrs
MCB 5225	Molecular Biology of Disease	3 hrs
MCB 5505	Molecular Virology	3 hrs
MCB 5654C	Applied Industrial Microbiology	3 hrs
MCB 5932	Current Topics in Molecular Biology	3 hrs
PCB 3063	Genetics	3 hrs
PCB 3703C	Human Physiology	4 hrs
PCB 4234	Cancer Biology	3 hrs
PCB 4521	Tissue Engineering	3 hrs
PCB 4805	Endocrinology	3 hrs
PCB 5275	Signal Transduction Mechanics	3 hrs

¹ Students must take MCB 3203L Pathogenic Microbiology Lab in order for the combination to count as 1 restricted elective

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6. Capstone Requirements

- None

7. Foreign Language Requirements

Admissions

- Two years of one foreign language in high school, or one year of one foreign language in college (or equivalent proficiency exam) prior to graduation.

Graduation

- None

8. Electives

- Variable

9. Additional Requirements

- None

10. Required Minors

- None

11. Departmental Exit Requirements

- A student must complete all coursework in the baccalaureate curriculum as shown, and, earn a GPA of at least 2.0 for all coursework in the Prerequisites, Core and Restricted Electives

- A minimum of 20 hours must be taken at UCF in the department of the major

- Students will be required to take a comprehensive test during their last semester

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 and maintain a 3.2 UCF GPA; 3.5 in the major; 3.2 cumulative average for graded upper division courses regardless of the institution
- Complete the following with a grade of B or better:
BSC 3403C Honors Quantitative Biological Methods 4 hrs
- Complete the following with a grade of B or better and successfully complete the oral defense of the Honors Thesis
MCB 4970H Honors Undergraduate Thesis II 3 hrs

Related Programs

- Biology
- Chemistry
- Medical Laboratory Sciences
- Biomedical Sciences

Certificates

- None

Related Minors

- Biology
- Chemistry
- Biomedical Sciences

Advising Notes

- None

Transfer Notes

- Students who begin a two semester sequence course (e.g. General Chemistry) at a Florida College System institution are strongly encouraged to complete the sequence before transferring. If it will not be possible to complete the sequence before transferring, the student should postpone beginning the course until enrolling at UCF.

Acceptable Substitutes for Transfer Courses

- Substitutes for Common Program Prerequisites
- MAC X311 or MAC X233 or MAC X353 or MAC X281

- PHY X253C & PHY X054C or PHY X048/X048L & PHY X049/X049L

- STA X023 or STA X122 or STA X014 or STA X024 or STA X321

Acceptable Substitutes

CHM 2045C may be substituted with CHM 2040 and CHM 2041	4 hrs
BSC 2011C Biology II	4 hrs
may be substituted with: BSC 3403C	
CHM 2045C Chemistry Fundamentals I	4 hrs
may be substituted with: CHM 2040	
CHM 2045C Chemistry Fundamentals I	4 hrs
may be substituted with: CHM 2041	
Plan of Study	
Freshman Year - Fall	14 hrs
ENC 1101 Composition I	3 hrs
CHM 2045C Chemistry Fundamentals I	4 hrs
1 MAC 2311C Calculus with Analytic Geometry I	4 hrs
GEP	3 hrs

¹ or follow math sequence determined by Math Placement Exam

Freshman Year - Spring 14 hrs

ENC 1102 Composition II	3 hrs
BSC 2010C Biology I	4 hrs
CHM 2046 Chemistry Fundamentals II	3 hrs
CHM 2046L Chemistry Fundamentals Laboratory	1 hr
GEP	3 hrs

Sophomore Year - Fall 14 hrs

CHM 2210 Organic Chemistry I	3 hrs
MCB 3020C General Microbiology	5 hrs
GEP	3 hrs

Select 1: 3 hrs

STA 2023 Statistical Methods I or	3 hrs
CGS 1060C Introduction to Computers	3 hrs

Sophomore Year - Spring 16 hrs

CHM 2211 Organic Chemistry II	3 hrs
BSC 3403C Quantitative Biological Methods	4 hrs
GEP	3 hrs
Restricted Elective or Elective	3 hrs

Select 1: 3 hrs

CHM 2211L Organic Laboratory Techniques I or	2 hrs
Elective	3 hrs

Sophomore Year - Summer 9 hrs

Restricted Elective or Elective	3 hrs
Elective	3 hrs

Select 1: 3 hrs

CHM 2211L Organic Laboratory Techniques I or	2 hrs
Elective	3 hrs

Junior Year - Fall 13 hrs

PCB 3522 Molecular Biology I	3 hrs
MCB 4720 Industrial Perspectives Seminar	3 hrs
GEP	3 hrs

Select 1: 4 hrs

PHY 2053C College Physics I or	4 hrs
1 PHY 2048C General Physics Using Calculus I	4 hrs

¹*Students electing to enroll in the PHY2048/2049 sequence must plan to accommodate MAC 2311C/2312 as prerequisites.

Junior Year - Spring 15 hrs

PCB 4524 Molecular Biology II	3 hrs
PCB 4280 Molecular Immunology	3 hrs
PCB 3233L Immunology Laboratory	1 hr
PCB 4529C Experimental Molecular Cell Biology	4 hrs

Select 1: 4 hrs

PHY 2054C College Physics II or	4 hrs
1 PHY 2049C General Physics Using Calculus II	4 hrs

¹*Students electing to enroll in the PHY2048/2049 sequence must plan to accommodate MAC 2311/2312 as prerequisites.

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Senior Year - Fall	13 hrs
MCB 4721C Methods in Biotechnology	4 hrs
MCB 4312 Molecular Biotechnology	3 hrs
Restricted Elective or Elective	3 hrs

Select 1:	3 hrs
BCH 4053 Biochemistry I or	3 hrs
MCB 4414 Microbial Metabolism	3 hrs

Senior Year - Spring	12 hrs
PCB 4174 Foundation of Bio-Imaging Science	3 hrs
GEP	3 hrs
Restricted Elective or Elective	3 hrs

Select 1:	3 hrs
BCH 4053 Biochemistry I or	3 hrs
MCB 4414 Microbial Metabolism	3 hrs

■ For students who transfer in their junior year from a Florida College System institution, the revised sequence of courses is provided [it is assumed that GEP and physics will be completed at an FCS institution:

Junior Year - Fall

■ Students electing to enroll in the PHY2048/2049 sequence must plan to accommodate MAC 2311/2312 as prerequisites.

MCB 3020C General Microbiology	5 hrs
MCB 4720 Industrial Perspectives Seminar	3 hrs
Restricted Elective	3 hrs
Free Elective	3 hrs

Junior Year - Spring

PCB 3522 Molecular Biology I	3 hrs
BSC 3403C Quantitative Biological Methods	4 hrs
BCH 4053 Biochemistry I	3 hrs
Restricted Elective	3 hrs

Senior Year - Fall

MCB 4414 Microbial Metabolism	3 hrs
MCB 4721C Methods in Biotechnology	4 hrs
MCB 4312 Molecular Biotechnology	3 hrs
Elective 3000 level	3 hrs

Senior Year - Spring

PCB 4524 Molecular Biology II	3 hrs
PCB 4280 Molecular Immunology	3 hrs
PCB 3233L Immunology Laboratory	1 hr
PCB 4529C Experimental Molecular Cell Biology	4 hrs
PCB 4174 Foundation of Bio-Imaging Science	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

Equipment Fees

- Part-Time Student: \$39 per term
- Full-Time Student: \$78 per term