UCF Degree Programs

Biotechnology (B.S.)

College of Medicine

Burnett School of Biomedical Sciences

Health and Public Affairs II, Room: 335

http://www.biomed.ucf.edu

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Phone: 407-823-5932

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)

Select 1: 4 hrs

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

C: Mathematical Foundations

Required STA 2023 Statistical Methods I 3 hrs

D: Social Foundations (6 hrs)

Select 1:

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 Chemistry Fundamentals I 4 hrs

HC 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 4912 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 Pathology 3 hrs
PCB 3233L Immunology Laboratory 1 hr

or

PCB 3233 Immunology and Pathology 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 I 1 hr
CHM 2211L Organic Laboratory Techniques I 2 hrs

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:

MAC 2311C Calculus with Analytic Geometry I or 3 hrs
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
MCB 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
5 MCB 5225 Molecular Biology of Disease 3 hrs
MCB 5505 Molecular Virology 3 hrs
MCB 5654C Applied Industrial Microbiology 3 hrs
MCB 5532 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 Mechanisms 3 hrs

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

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
- For students electing to enroll in the PHY2048/2049 sequence, students must plan to accommodate MAC 2311C/2312 as prerequisites.

Freshman Year - Spring
- ENC 1102: Composition I
- MCB 3020C: General Microbiology
- GEP: 3 hrs
- Restricted Elective or Elective

Sophomore Year - Fall
- CHM 2211: Organic Chemistry II
- MCB 4720: Molecular Biology
- GEP: 3 hrs
- Restricted Elective or Elective

Junior Year - Fall
- PCB 3522: Molecular Biology
- MCB 4720: Industrial Perspectives Seminar
- GEP: 3 hrs
- Select 1: 4 hrs
- PCB 4028: Molecular Immunology
- PCB 3233L: Immunology Laboratory
- PCB 4529C: Experimental Molecular Cell Biology
- PHY 2054C: College Physics I or
- 1 PHY 2048C: General Physics Using Calculus I

Senior Year - Fall
- MCB 4721C: Methods in Biotechnology
- MCB 4312: Molecular Biotechnology
- Restricted Elective or Elective

1. or follow math sequence determined by Math Placement Exam

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