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/
Email: bsbsadvising@ucf.edu
Dr. Griffith Parks, Director
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)
- Required STA 2023 Statistical Methods I 3 hrs

Select 1: 4 hrs
- Required MAC 2311C Calculus with Analytic Geometry I or GEP
- Required MAC 2253 Applied Calculus 3 hrs

C: Mathematical Foundations
- Required CHM 2045C Chemistry Fundamentals I 4 hrs

D: Social Foundations (6 hrs)
- Required CHM 2045C Chemistry Fundamentals 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 GEP
2045C
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.

Select 1: (21 hrs)
- 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: 3 hrs
- 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 one: 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 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
- 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 3 hrs
- PCB 4284 Immunology 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 residence 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
- BSC 2011C Biology II may be substituted with BSC 3403C
- CHM 2045C Chemistry Fundamentals I may be substituted with CHM 2040
- CHM 2045C Chemistry Fundamentals I 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
  - GE

Select 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
  - GE

Sophomore Year - Fall
- 14 hrs
  - ENC 1101 Composition I 3 hrs
  - CHM 2210 Organic Chemistry I 4 hrs
  - MCB 3020C General Microbiology 5 hrs
  - GE

Select 1:
- STA 2023 Statistical Methods I or 3 hrs
- CNS 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
  - GE
  - Restricted Elective or Elective 3 hrs

Select 1:
- 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:
- 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 Medical Terminology 3 hrs
  - GE

Select 1:
- PHY 2045C General Physics Using Calculus I 4 hrs
- 1 PHY 2046C General Physics Using Calculus II 4 hrs

Junior Year - Spring
- 15 hrs
  - PCB 4524 Molecular Biology II 3 hrs
  - PCB 4528 Molecular Immunology 3 hrs
  - PCB 3233L Immunology Laboratory 1 hr
  - PCB 4529C Experimental Molecular Cell Biology 4 hrs

Select 1:
- PHY 2045C College Physics II or 4 hrs
- 1 PHY 2046C General Physics Using Calculus II 4 hrs

1 *Students electing to enroll in the PHY2048/2049 sequence must plan to accommodate MAC 2311C/2312 as prerequisites.
### Senior Year - Fall
- MCB 4721C Methods in Biotechnology: 4 hrs
- MCB 4312 Molecular Biotechnology: 3 hrs
- Restricted Elective or Elective: 3 hrs

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

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

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

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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

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

**Equipment Fees**
- Part-Time Student: $39 per term
- Full-Time Student: $78 per term