Applied Molecular Biology and Biotechnology (AMBB) Major
Curriculum for 2022-2023 Academic Year
122 Credits & ≥2.0 Cumulative GPA Required for Graduation

University Requirements:

ENGL110 Seminar in Composition*
First Year Seminar (FYS) 0-4 cr (UNIV101)
√ Discovery Learning Experience (DLE) 3 cr (satisfied by MMSC444)
Multicultural Requirement 3 cr (may simultaneously satisfy breadth)
University Breadth Requirements* (these must be from four different areas of study/course rubrics)
√ Creative Arts & Humanities* 3 cr (satisfied by ≥ C- in HLTH241)
√ History & Cultural Change* 3 cr
√ Social & Behavioral Sciences* 3 cr
√ Math, Natural Science & Technology* 3 cr (satisfied by MMSC444)
√ Capstone Experience (satisfied by MMSC444)

MAJOR REQUIREMENTS (minimum grade C- for all required major courses):

Mathematics (one of the following: MATH114, 115, 117, 221 or 241; MATH115 required for PHYS201)

Physical and Biological Foundational Sciences (24 credits)

BISC207 Introductory Biology I: 4
BISC208 Introductory Biology II: 4
CHEM103/104 Gen Chem Lecture/Lab I: 4
CHEM104/105 Gen Chem Lecture/Lab II: 4

Science Sequence (8 credits). Complete one of the following sequences:

Option I:

KAAP309 Human Anatomy & Physiology I: 4 AND
KAAP310 Human Anatomy & Physiology II: 4

Option 2:

PHY501/502L Introductory Physics I: 4 AND
PHY502/502L Introductory Physics II: 4

Core *(63 credits; minimum grade of C- required in all “MMSC” courses):

ANFS449 Food Biotechnology: 4
HLTH241 Ethical Aspects of Healthcare: 3
MMSC100 Intro to Medical & Molecular Sciences: 1
MMSC200 The Language of Medicine 3
MMSC301 Introduction to Biotechnology: 2
MMSC360 Clinical Immunology & Medical Virology: 3
MMSC375 Stats & Rsrch for Med Lab Scientists: 2
MMSC408 Molecular Preparatory Techniques: 2
MMSC425 Basic Molecular Techniques: 4
MMSC426 Protein Purification and Characterization: 3
MMSC427 Flow Cytometry: 2
MMSC435 Introduction to Genomics, Proteomics & Bioinformatics: 3

MMSC43 Laboratory Practice & Leadership II: 1
MMSC44 Biotechnology Practicum I: 3
MMSC45 Biotechnology Practicum II: 3
MMSC46 Biotechnology Practicum III: 3
MMSC47 Biotechnology Practicum IV: 3
MMSC48 Medical Biochemistry: 4
MMSC49 Cell and Tissue Culture Techniques: 4
MMSC461 Laboratory Practice & Leadership I: 1
MMSC471 Laboratory Practice & Leadership II: 1
MMSC490 Clinical and Molecular Cell Biology: 3
MMSC491 Human Molecular Genetics: 3
MMSC492 Application Molecular Diagnostic Techniques: 3

≥ 122 credits/2.0 Cum GPA required for graduation

Student Name: ________________________________  Student Signature: ________________________________

MMSC Program Director: ____________________________________________  Date: ______________________

√ - indicates that this requirement will be satisfied by a course within the required major/core courses
∗≥ C- required (in addition to all “MMSC” courses)

Students are initially admitted to the AMBB Interest major and apply for the AMBB-BS typically at the end of the sophomore year.
Preferred Criteria for Admission to the AMBB-BS Major: ≥ 2.9 GPA in first four semesters strongly suggested (exceptions considered on a case by case basis): completion of 60 credits including BISC207, BISC208, CHEM103/133, CHEM104/134, CHEM213/215, CHEM214/216 or 321/325, CHEM214/216 or 322/326, MATH114 AND THE SEQUENCE OF KAAP309 & KAAP310 OR PHYS201 AND PHYS202. Submit request via Webforms in UDSIS.

6.24.22
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Suggested AMBB Academic Program Sequence
Consult with your advisor for possible alternative sequencing and term availability of courses. MMSC course term availability listed below is proposed for the 2022-23 academic year but is subject to change. Refer to Course Descriptions at https://udapps.nss.udel.edu/CourseDescription/ for associated course Prerequisites and Corequisites.

First Year
**Fall – 16 credits**
- BISC207 Intro Biology I: 4
- CHEM103/133 Gen Chemistry: 4
- Mathematics: 3
- MMSC100 Intro to Med & Molecular Sciences: 1
- UNIV101 First Year Seminar: 1
- Elective: 3

**Spring – 14 credits**
- BISC208 Intro Biology II: 4
- CHEM104/134 Gen Chemistry: 4
- ENGL110 Seminar in Composition: 3
- MMSC200 The Language of Medicine: 3
- Elective: 3

Second Year
**Fall – 16 credits**
- CHEM321/325 Org Chem I Lecture/Lab: 3/1 OR CHEM213/215 Elem Org Chem Lecture/Lab: 3/1
- MMSC301 Introduction to Biotechnology: 2 (fall only)
- PHYS201/221L Introductory Physics I: 4 OR KAAP309 Human Anatomy & Physiology I: 4
- Breadth Requirement (e.g. HCC): 3
- Elective: 3

**Spring – 16 credits**
- CHEM322/326 Org Chem II Lecture/Lab: 3/1 OR CHEM214/216 Elem Biochem Lecture/Lab: 3/1
- PHYS202/222L Introductory Physics II: 4 OR KAAP310 Human Anatomy & Physiology II: 4
- Multicultural: 3
- Breadth Requirement (e.g. SBS): 3
- Elective: 2

Third Year
**Fall – 15 credits; MMSC courses below Fall only**
- MMSC360 Clin Immunology & Medical Virology: 3
- MMSC408 Molecular Preparatory Techniques: 2
- MMSC425 Basic Molecular Techniques: 4
- MMSC490 Clinical and Molecular Cell Biology: 3
- Elective: 3

**Spring – 17 credits; MMSC courses below Spring only**
- MMSC426 Protein Purification & Characterization: 3
- MMSC450 Medical Biochemistry: 4
- MMSC451 Cell and Tissue Culture Techniques: 4
- MMSC491 Human Molecular Genetics: 3
- MMSC492 Application of Molecular Diagnostics Techniques: 3

Fourth Year
**Fall – 12 credits; MMSC courses below Fall only**
- MMSC375 Stats and Research for Med Lab Science: 2
- MMSC435 Practical Genomics, Proteomics and Bioinformatics: 3
- MMSC441 Biotechnology Practicum I: 3
- MMSC442 Biotechnology Practicum II: 3
- MMSC461 Laboratory Practice & Leadership I: 1

**Spring – 16 credits; MMSC courses below Spring only**
- ANFS449 Food Biotechnology: 4
- HLTH241 Ethical Aspects of Healthcare: 3
- MMSC427 Flow Cytometry: 2
- MMSC443 Biotechnology Practicum III: 3
- MMSC444 Biotechnology Practicum IV: 3
- MMSC471 Laboratory Practice & Leadership II: 1

Total of 122 credits

**4+1 BS/MS Program students substitute:** 1) MMSC603 Research Design for MMSC375, and 2) MMSC690 Clinical & Molecular Cell Biology for MMSC490

Students are strongly advised to refer to their Degree Audit regularly (accessed via UDSIS) to confirm progressive completion of graduation requirements as designated in the UD online Undergraduate Catalog. Although every effort is made to accurately reflect curriculum requirements here, students are responsible for utilizing the Degree Audit for official confirmation of the status of degree requirement completion. Applied Molecular Biology & Biotechnology 22-23 program requirements can be found at https://catalog.udel.edu/preview_program.php?catoid=63&poid=49459&returnto=16376

Please be sure to select the correct academic year for your program requirements.

6.24.22