**University Requirements:**

\_\_\_ ENGL110 First Year Writing\*

\_\_\_ First Year Experience I, 1 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 ≥ C- in BISC207 or 208 or CHEM103 or 104)

\_√\_ 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

\_\_\_ CHEM103/133 Gen Chem Lecture/Lab I: 4

\_\_\_ CHEM104/134 Gen Chem Lecture/Lab II:4

\_\_\_ CHEM321/325 Org Chem I Lecture/Lab: 3/1 **OR**

 CHEM213/215 Elem Org Chem Lec/Lab: 3/1

\_\_\_ CHEM322/326 Org Chem II Lecture/Lab: 3/1 **OR**

 CHEM214/216 Elem Biochem Lec/Lab: 3/1

**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:**

\_\_\_ PHYS201/221L Introductory Physics I: 4 **AND**

\_\_\_ PHYS202/222L 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 & Molec Sciences (P/F): 1

\_\_\_ MMSC200 The Language of Medicine 3

\_\_\_ MMSC301 Introduction to Biotechnology: 2

\_\_\_ MMSC375 Biostats for Biological & Hlth Sciences: 2

\_\_\_ MMSC408 Molecular Preparatory Techniques: 2

\_\_\_ MMSC415 Clinical Immunology & Medical Virology: 3

\_\_\_ MMSC425 Basic Recombinant DNA Techniques: 4

\_\_\_ MMSC426 Protein Purification and Characterization: 3

\_\_\_ MMSC427 Flow Cytometry: 2

\_\_\_ MMSC435 Introduction to Genomics, Proteomics &

Bioinformatics: 3

\_\_\_ MMSC441 Biotechnology Practicum I: 3

\_\_\_ MMSC442 Biotechnology Practicum II: 3

\_\_\_ MMSC443 Biotechnology Practicum III: 3

\_\_\_ MMSC444 Biotechnology Practicum IV: 3

\_\_\_ MMSC450 Medical Biochemistry: 4

\_\_\_ MMSC451 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 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.***

**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 **2024-25** 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 30 credits**

**FALL – 16 credits**

BISC207 Intro Biology I: 4

CHEM103/133 Gen Chemistry: 4

Mathematics: 3

MMSC100 Intro to Med & Molecular Sciences (P/F): 1

UNIV101 First Year Experience I: 1

Elective: 3

**SPRING – 14 credits**

BISC208 Intro Biology II: 4

CHEM104/134 Gen Chemistry: 4

ENGL110 First Year Writing: 3

MMSC200 The Language of Medicine: 3

**Second Year 32 credits**

**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 32 credits**

**FALL – 15 credits; MMSC courses below Fall only**

MMSC408 Molecular Preparatory Techniques: 2

MMSC415 Clin Immunology & Medical Virology: 3

MMSC425 Basic Recombinant DNA 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 (fall & spring): 3

MMSC492 Application of Molecular Diagnostics Techniques: 3

**Fourth Year 28 credits**

**FALL – 12 credits; MMSC courses below Fall only**

MMSC375 Biostats for Biological & Health Sciences: 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

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**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 program requirements can be found at [www.udel.edu/catalog](http://www.udel.edu/catalog) > Programs > Applied Molecular Biology & Biotechnology (BS).

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