

UAB MS Program in Multidisciplinary Biomedical Science (MSMBS) Accelerated Bachelors-Masters (ABM) Program

WHY CHOOSE ABM through MBS?

- *Only 5 additional courses (18 credit hours)*
- *Up to 12 hours as shared credit for both BS and MS*
- *Aligns well with many undergraduate majors*
- *Graduate tuition at the undergraduate rate*
- *BS & MS degrees are completed in four years!*
- *Mentoring & professional development*
- *A competitive career advantage*

Available Concentrations (Concentration designation appears on your transcript)

- Bioinformatics
- Cancer Biology
- Genetics & Genomic Sciences
- Immunology
- Neuroscience
- Pharmacology

Website: <https://www.uab.edu/graduate/programs/msmbs>

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Coursework Guide for MSMBS-ABM Students (Updated Feb 2023)

Requirements:

Academic: Minimum 3.5 GPA; Junior status (60 hours); 36 hours completed at UAB

Required Pre-requisites for MBS: CH 235 and lab, CH 237 and lab, BY 123, and BY 124

Encouraged but not Required for MBS: Biochemistry; Cell Biology; Genetics; Molecular Biology; Physiology

Please note: ABM students wishing to start MBS in SU semester would benefit from prior completion of undergraduate coursework in cell biology and/or biochemistry in preparation for MBS 603 (Human Physiology).

Required Courses for MBS Plan II Degree (30 total credit hours):

MBS 601: Molecular and Cell Biology (FA; 4 credits)

MBS 602: Biochemistry and Cell Biology (SP; 4 credits)

MBS 603: General Human Physiology (SU; 4 credits, 10-week summer session)

BST 603: Introductory Biostatistics for Graduate Biomedical Sciences (SP: Online; SU or FA; 3 credits)

GRD 617: Critical Thinking and Scientific Integrity (SP; SU; or FA; 3 credits)

Electives: Variable; may all be shared at 400/600 level; MBS 698 Non-Thesis Research is also an option (12 credits)

Required Courses for MBS Plan I Thesis Degree (45 total credit hours):

MBS 601 (4 credit hours): Molecular and Cell Biology (FA)

MBS 602 (4 credit hours): Biochemistry and Cell Biology (SP)

MBS 603 (4 credit hours): General Human Physiology (SU; 10-week summer session)

BST 603 (3 credit hours): Intro Biostatistics for Graduate Biomedical Sciences (SP: Online; SU or FA; 3 credits)

GRD 617 (3 credit hours): Critical Thinking and Scientific Integrity (SP; SU; or FA; 3 credits)

MBS 697 (3x1 credit hour): Colloquium for Thesis Students (SP or FA, 1 credit hour/semester)

MBS 698 (9-12 credit hours): Non-Thesis Research (variable 1-6 credit hours/semester) *

MBS 699 (3-6 credit hours): Thesis Research (variable 1-3 credit hours/semester) *

*Combination of MBS 698+MBS 699 must = at least 15 credit hours

Electives (9 credit hours): Variable; Concentrations are available if all three electives in same discipline

MSMBS-ABM Elective Courses

Bioinformatics

INFO 302 for INFO 601/701: Bioinformatics I-Introduction (FA; 3 credits)
INFO 403 for INFO 602/702: Bioinformatics II-Algorithms or for CS 652: Adv. Algorithms & Applications (SP; 3 credits)
INFO 404 for INFO 603/703: Biological Data Management (SP; 3 credits)
INFO 412 for INFO 612/712: Data Visualization for Bioinformatics (TBD; 3 credits)
INFO 610/710: Programming with Biological Data (SU; 3 credits)- not shareable
INFO 604/704: Next Generation Sequencing Analysis (SP; 3 credits)- not shareable

Biology

BY 311/511: Molecular Genetics (FA; 3 credits)
BY 330/530: Graduate Cell Biology (SP and FA; 3 credits)
BY 412/512: 21st Century Gene Editing (SP; 3 credits)
BY 414/614: Advanced Cell Biology (SP; 3 credits)
BY 416/616: Cellular Physiology (TBD; 3 credits)
BY 418/618: Colloquium in Biology of Aging (SP and FA; 1 credit)
BY 429/629: Evolutionary Biology (FA or SP; 3 credits)
BY 436/636: Biological Processes in Aging (SP; 3 credits)
BY 437/637: Epigenetics (FA; 3 credits)
BY 444/644: Biological Experimental Design and Methods (SP; 3 credits)
BY 474/674: Chemical Ecology (SP, 3 credits)

Cancer Biology

CNBY 410/610: Cancer Cell Growth (SP; 3 credits)
CNBY 420/620: The Cancer Genome (FA; 3 credits)
CNBY 430/630: The Tumor Terrain (FA; 3 credits)
CNBY 440/640: Tumor Signaling Pathways (FA; 3 credits)
CNBY 460/660: Cancer Immunology & Histopathology (SP; 3 credits)
CNBY 470/670: Oncology Therapy (SP; 3 credits)

Genetics & Genomic Sciences

GGSC 410/610: Genetic Basis of Human Disease (SP; 3 credits)
GGSC 415/615: Aquatic Animal Models of Human Disease (FA; 3 credits)
GGSC 420/620: Applications of Bioinformatics (FA; 3 credits)
GGSC 435/635: Zebrafish Models (SP; 3 credits)
GGSC 470/670: Principles of Pharmacogenetics (SP; 3 credits)
GGSC 490/690: Model Systems for Genetic Disorders (FA; 3 credits)
GGSC 491/691: Personalized Genomic Medicine (SP; 3 credits)

Immunology

MIC 400/600: Microbiome in Health/Immunity (SP online; 3 credits)
MIC 401/601: Innate Immune System (FA; 3 credits)- for IMM majors only or by special permission
MIC 402/602: Adaptive Immune System (SP; 3 credits) - for IMM majors only or by special permission
MIC 403/603: Host-Pathogen Interactions (FA; 3 credits)* - for IMM majors only or by special permission
MIC 404/604: Immune-Mediated Diseases (SP; 3 credits)* - for IMM majors only or by special permission
*pre-requisites = MIC 401/601 & MIC 402/602

MBS

MBS 696: Special Topics (SU; 3 credits, needs permission from Dr. Shacka)
MBS 698: Non-Thesis Research (FA/SP/SU; 3 credits); Requires pre-approval by Dr. Shacka

Neuroscience

NBL 655: Cellular & Molecular Neuroscience (FA/SP/SU; 3 credits); not shareable; ineligible for NEUR UGs; required pre-requisite (or NBL 355) for non-NEUR UGs to take additional 600-level NBL electives
NBL 656: From Systems to Cognitive Neuroscience (FA/SP/SU; 3 credits); not shareable; ineligible for NEUR UGs
NBL 420/620: No Self Control (SP; 3 credits)
NBL 425/625: Methods in Human Neuroimaging (FA; 3 credits)
NBL 433/633: Diseases of the Nervous System (FA; 3 credits)
NBL 434/634: Mechanisms of Memory (SP; 3 credits)
NBL 444/644: Neurodegeneration (SP; 3 credits)
PY 435/620: Motivation and Emotion (FA/SP; 3 credits)
PY 453/653: Foundations of Behavioral Neuroscience (FA; 4 credits)
PY 683: Developmental Disabilities (SP; 3 credits)
PY 431/687: The Dynamics of Pain (SP; 3 credits)
PY 493/693: Cognitive Neuroscience (SP; 3 credits)

Pharmacology & Toxicology

PHR 611: Physiological Principles of Pharmacology & Toxicology (FA; 3 credits)
PHR 612: Organ Systems Physiology & Pharmacology I (SP; 3 credits)
PHR 613: Organ Systems Physiology & Pharmacology II (SU; 3 credits)
PHR 614: Drug Development (FA; 3 credits)
PHR 615: Pharmacokinetics (SP; 3 credits)