

# BIOMEDICAL RESEARCH, M.S. (NON-THESIS)

## Program Description

The Biomedical Sciences and Clinical and Translational Sciences departments of the Joan C. Edwards School of Medicine offer the following degrees: Doctor of Philosophy (Ph.D.), M.D./Ph.D., and Master of Science (M.S.), both thesis and non-thesis.

The primary goal of the Biomedical Research (BMR) program is to use biomedical and translational research approaches to help reduce the numerous health disparities and improve the health of the population in West Virginia and central Appalachia. To do this, students will take an interdisciplinary approach with defined interests and special in-depth training in one of the following research areas of emphasis: Cardiovascular Disease; Cell Biology; Obesity and Related Diseases; Neurobiology and Addiction; and Toxicology and Environmental Health. These areas are designed to be flexible and research oriented in order to develop the interests, capabilities and potential of all students pursuing careers in academic, government, or industrial biomedical sciences.

In addition, the BMR program offers a non-thesis Master of Science degree with a medical sciences area of emphasis to improve the science foundation of students seeking admission into doctoral programs in medicine or other health-related professions. Admission into the BMR M.S. Medical Sciences program does not guarantee admission into medical school. Additionally, a research component to this emphasis is available, but not required. Students choosing the research component may work up to 19 hours per week while earning a minimum of \$10/hour. Students are expected to stay in good academic standing.

Also offered is the combined M.D./Ph.D. Students in this program blend the discovery of new knowledge with clinical medicine at the intersection of science and medicine. M.D./Ph.D. Most graduates work as physician-scientists at medical schools, conducting disease-related research and applying the results to the treatment of patients. They have a unique perspective on both the basic science and clinical science behind disease. Further general information is available at the Association of American Medical Colleges website ([aamc.org](http://www.aamc.org) (<http://www.aamc.org>)).

## Admission Requirements

Applicants must meet the admission requirements of both Marshall University Graduate Admissions as outlined on their website - [www.marshall.edu/graduate/admissions/how-to-apply-for-admission](http://www.marshall.edu/graduate/admissions/how-to-apply-for-admission) (<http://www.marshall.edu/graduate/admissions/how-to-apply-for-admission/>) - and the Biomedical Research program of the Marshall University Joan C. Edwards School of Medicine. Interested persons should visit <https://jcesom.marshall.edu/research> (<https://jcesom.marshall.edu/research/>), e-mail [mubiomed@marshall.edu](mailto:mubiomed@marshall.edu) and/or call 304-696-3365.

## Biomedical Research M.S. (Thesis and Non-Thesis) Applicants

### Minimum Admission Requirements

- A baccalaureate degree from a regionally accredited college or university
- Successfully completed, with a grade of C or better, one year of general biology, physics, general chemistry, and organic chemistry, all with associated laboratories. A semester of biochemistry or molecular biology with associated laboratory is also required.
- A recommended minimum Grade Point Average (GPA) of 3.0
- A recommended minimum GPA of 3.0 in combined science and math courses
- Official transcript from degree granting institution/s and institutions where relevant post-baccalaureate or graduate coursework was taken
- Departmental materials: three recommendations, program online form, written statement addressing educational and career goals, CV/resume

### Priority Deadline - June 1 for Best Chance of Admission

Applications are accepted on a rolling basis and are reviewed until the class is filled. Applications will be considered after the priority deadline until June 30, if openings are available. The completed application, application fee, official transcript(s), three recommendations, written statement, and official GRE scores should be received in the Graduate Admissions Office by June 1. *For the Medical Sciences area of emphasis only, no entrance exam is required.* The program online form should be received in the Office of Research and Graduate Education by June 1.

### Duration of Degree Program

Students are expected to complete the degree within two years. This includes the summer between years one and two for M.S. (thesis) students.

### Entry Term

B.M.R. M.S. (thesis) students may matriculate in July (summer III term) or in August (fall term). B.M.R. M.S. (non-thesis) students with an area of emphasis in Medical Sciences must matriculate in the fall term only.

## Qualifying for Admission into Marshall University

### Joan C. Edwards School of Medicine without the MCAT (Pathway Program)

#### Requirements

- Have a minimum 3.4 GPA in the BMR, M.S. Medical Sciences program at the time of the Marshall University Joan C. Edwards School of Medicine (MUJCESOM) interview
- Graduate from the program with a minimum of a 3.4 GPA
- Pass the M.S. comprehensive exam on the first attempt in May of the program's second year

#### Benefits

- An MCAT score will not be required for admittance to MUJCESOM
- For interview purposes, out-of-state applicants will be considered the same as in-state students, regardless of residency. Marshall University JCESOM tuition cost will be based on residency status.
- With satisfactory standing, students will receive the mandatory program letter of support.

## Program Requirements

### Biomedical Research, M.S. (Non-Thesis Medical Sciences Area of Emphasis)

A minimum of 36 credit hours is required for the non-thesis degree. In addition, the student must pass a written comprehensive examination covering

Code	Title	Credit Hours
BMR 601	Intro DNA, RNA & Proteins	3
BMR 602	Intro Cells and Metabolism	3
BMR 603	Regulation Cell Function	2
BMR 604	Cell Basis of Disease	1
BMR 882	Research	1-15
Or have a research		

To remain in good academic standing and to graduate, the student must have a minimum graduate GPA of 3.0.

### Biomedical Research, M.S. (Non-Thesis Medical Sciences Research Area of Emphasis)

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Or have a research		

To remain in good academic standing and to graduate, the student must have a minimum graduate GPA of 3.0.

## Plan of Study

### Biomedical Research, M.S. (Non-Thesis Medical Sciences Area of Emphasis)

All students are required to successfully complete the following core curriculum:

Code	Title	Credit Hours
<b>Core Curriculum</b>		
BMR 601	Intro DNA, RNA & Proteins	3
BMR 602	Intro Cells and Metabolism	3
BMR 603	Regulation Cell Function	2
BMR 604	Cell Basis of Disease	1
Select one of the following or equivalent:		
BMR 617	BMR Statistics Technique	3
BSC 517	Biostatistics	3
EDF 676	Statistical Methods	3
PSY 517	Inter Behavioral Stat	3

STA 518	Biostatistics	3
BMR 680	Seminar (minimum of 4 hrs.)	1
BMR 785	Intro to Research	1-6
MCB 631	Medical Microbiology I	3
MCB 632	Medical Microbiology II	2
PHS 628	Mammalian Neurophysiology	2
Total Credit Hours		21-26

### Electives

Code	Title	Credit Hours
PHS 629	Mammalian Physiology	6
PMC 621	Medical Pharmacology I	6
PMC 622	Medical Pharmacology II	2

In addition, after 12 hours of coursework has been completed, the student must submit to an M.S. Plan of Study form to the Dean of the Graduate College.

### Biomedical Research, M.S. (Non-Thesis Medical Sciences Research Area of Emphasis)

All students are required to successfully complete the following core curriculum:

Code	Title	Credit Hours
<b>Core Curriculum</b>		
BMR 601	Intro DNA, RNA & Proteins	3
BMR 602	Intro Cells and Metabolism	3
BMR 603	Regulation Cell Function	2
BMR 604	Cell Basis of Disease	1
Select one of the following or equivalent:		
BMR 617	BMR Statistics Technique	3
BSC 517	Biostatistics	3
EDF 676	Statistical Methods	3
PSY 517	Inter Behavioral Stat	3
STA 518	Biostatistics	3
BMR 680	Seminar (minimum of 4 hrs.)	1
BMR 785	Intro to Research	1-6
BMR 882	Research (minimum of 12 hrs.)	12
Total Credit Hours		26-31

### Recommended Elective Classes

Code	Title	Credit Hours
CTS 614	Online Survey Tools	3
PHS 629	Mammalian Physiology	6
MCB 631	Medical Microbiology I	3
MCB 632	Medical Microbiology II	2

In addition, after 12 hours of coursework has been completed, the student must submit an M.S. Plan of Study form to the Dean of the Graduate College.