

# CLINICAL AND TRANSLATIONAL SCIENCE M.S.

## Program Description

The Clinical and Translational Science (CTS) Department in the Marshall University Joan C. Edwards School of Medicine offers a Master of Science (M.S.) degree in Clinical and Translational Science. The goal of this program is to equip physicians in-training and other biomedical scientists with the information and training they need to translate basic clinical advances into improved patient care that will enhance the quality of life for patients in the Appalachian region, particularly southern West Virginia.

Students will receive education in clinical trial design, epidemiology, statistics, informatics, and translational research. Graduates of this program in the Clinical Trials area of emphasis will be able to lead clinical trials of new drugs and procedures in West Virginia, particularly in its rural regions. They also will be strong applicants for positions in schools of medicine and medical centers that have clinical and translational science centers. Clinical Research graduates can apply to doctoral programs in medicine or other health-related fields having a superior background in basic science, epidemiology, informatics, and statistics. Clinical Informatics graduates will have a background in bioinformatics, computer programming, and clinical trials design, thus making them strong candidates for positions in schools of medicine, medical centers, and the health care industry.

## Admission Requirements Clinical and Translational Science M.S. Admission Policy

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 Marshall University Joan C. Edwards School of Medicine Clinical and Translational Science Department Admissions Committee. 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.

## Minimum Admission Requirements

- A baccalaureate degree from a regionally accredited college or university. The degree must be completed prior to matriculation.
- Successful completion, with a grade of C or better, of one year of general biology, physics, general chemistry, and organic chemistry, all with associated laboratories. Successful completion of undergraduate courses in biochemistry and cell biology are highly recommended but not 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; other transcripts may be required.

- Departmental materials: three recommendations, program online form, written statement addressing educational and career goals, CV/résumé.

Applications are accepted on a rolling basis and are reviewed until the class is filled. Applications are only considered once we have received all required documentation. Applications will be considered until June 30, if openings are available. International applicants must meet the International deadline of March 15. The Clinical and Translational Sciences M.S. program is highly competitive thus early applications provide the best chance for acceptance.

Entrance into the Clinical and Translational Science M.S. program is restricted to fall semester only.

## Who Should Apply

- Undergraduates.
- Medical students at an LCME-accredited U.S. medical school with a current GPA of at least a 3.0.
- Postgraduate medical residents or fellows who have an M.D. or D.O. with a graduating GPA of 3.0 or better (equivalent GPA for foreign medical graduates).
- Ph.D.'s in biomedical sciences or Pharm.D.'s with graduating GPAs of 3.0 or better.

Medical students will apply to the program during their third year of training. After completing the requirements for the M.S. degree, students will finish the fourth year of medical school.

Medical residents and fellows who are admitted into this program will need to integrate coursework into a reduced clinical workload, thus extending their postgraduate medical education by two years.

## Program Requirements Duration of the Program

Students will attend full-time and complete the requirements for the Master of Science degree in two years. This includes attending during the summer between years one and two.

## Degree Requirements

All students are required to meet the general requirements of the Graduate College for receipt of a master's degree. A minimum of 36 credit hours is required for a non-thesis degree. In addition, all students must pass a written and/or oral comprehensive exam.

## Plan of Study Clinical and Translational Science, M.S. (Clinical Informatics Area of Emphasis)

All students are required to successfully complete the following curriculum.

Course	Title	Credit Hours
<b>First Year</b>		
<b>First Semester</b>		
BMR 660	Communication Bio Sci I	1
BMR 680	Seminar	1
CTS 600	Epi Used in Med Research	3
CTS 620	Basic Research Operations	3

CTS 635	Writing and Peer Review	1
CTS 640	Clinical Trials Journal Club	1
	Credit Hours	10
<b>Second Semester</b>		
BMR 661	Communication Bio Sci II	1
BMR 680	Seminar	1
CTS 610	Study Design & Stats	3
CTS 614	Online Survey Tools	3
CTS 630	Fundamentals of Team Science	2
CTS 640	Clinical Trials Journal Club	1
	Credit Hours	11
<b>Third Semester</b>		
<b>Summer</b>		
CTS 650	Rural Clinical Experience	5
	Credit Hours	5
<b>Second Year</b>		
<b>Fourth Semester</b>		
CTS 611	Machine Learn Journal Club	1
CTS 612	Intro Clin Machine Learn	6
& CTS 615	and Intro Clinical Databases	
CTS 616	Intro Clinical Program C#	3
	Credit Hours	10
<b>Fifth Semester</b>		
CTS 611	Machine Learn Journal Club	1
CTS 628	Intro to Java Cln Prog	7
& CTS 637	and Introduction to Tableau	
CTS 645	Navigating Health IT	3
	Credit Hours	11
	Total Credit Hours	47

## Clinical and Translational Science, M.S. (Clinical Research Area of Emphasis)

All students are required to successfully complete the following curriculum.

Course	Title	Credit Hours
<b>First Year</b>		
<b>First Semester</b>		
BMR 601	Intro DNA, RNA & Protiens	3
BMR 602	Intro Cells and Metabolism	3
BMR 680	Seminar	1
CTS 600	Epi Used in Med Research	3
CTS 635	Writing and Peer Review	1
CTS 640	Clinical Trials Journal Club	1
	Credit Hours	12
<b>Second Semester</b>		
BMR 603	Regulation Cell Function	2
BMR 604	Cell Basis of Disease	1
BMR 680	Seminar	1
CTS 614	Online Survey Tools	3
CTS 640	Clinical Trials Journal Club	1

PHS 667	Experimental Appr to Phys	4
	Credit Hours	12
<b>Third Semester</b>		
<b>Summer</b>		
BMR 785	Intro to Research	1-6
	Credit Hours	1-6
<b>Second Year</b>		
<b>Fourth Semester</b>		
BMR 680	Seminar	1
CTS 640	Clinical Trials Journal Club	1
CTS 660	Appalachian Phenotype	3
PMC 621	Medical Pharmacology I	6
	Credit Hours	11
<b>Fifth Semester</b>		
BMR 680	Seminar	1
CTS 610	Study Design & Stats	3
CTS 640	Clinical Trials Journal Club	1
PMC 622	Medical Pharmacology II	2
	Credit Hours	7
	Total Credit Hours	43-48

## Clinical and Translational Science, M.S. (Clinical Trials Area of Emphasis)

All students are required to successfully complete the following curriculum.

Course	Title	Credit Hours
<b>First Year</b>		
<b>First Semester</b>		
BMR 660	Communication Bio Sci I	1
BMR 680	Seminar	1
CTS 600	Epi Used in Med Research	3
CTS 620	Basic Research Operations	3
CTS 635	Writing and Peer Review	1
CTS 640	Clinical Trials Journal Club	1
	Credit Hours	10
<b>Second Semester</b>		
BMR 661	Communication Bio Sci II	1
BMR 680	Seminar	1
CTS 610	Study Design & Stats	3
CTS 614	Online Survey Tools	3
CTS 630	Fundamentals of Team Science	2
CTS 640	Clinical Trials Journal Club	1
	Credit Hours	11
<b>Third Semester</b>		
<b>Summer</b>		
CTS 650	Rural Clinical Experience	5
	Credit Hours	5
<b>Second Year</b>		
<b>Fourth Semester</b>		
BMR 680	Seminar	1
CTS 625	Clinical Operations Lab	1-6

CTS 640	Clinical Trials Journal Club	1
CTS 660	Appalachian Phenotype	3
Credit Hours		6-11
<b>Fifth Semester</b>		
BMR 680	Seminar	1
CTS 625	Clinical Operations Lab	1-6
CTS 640	Clinical Trials Journal Club	1
Credit Hours		3-8
Total Credit Hours		35-45