

CLINICAL AND TRANSLATIONAL SCIENCES, MASTER OF SCIENCE (M.S.)

Program goal

The Master of Science in Clinical and Translational Sciences program provides training and mentoring for a new generation of investigators who, regardless of primary areas of interest, will be able to understand the methods and techniques used along the pathway from the bench to the bedside, to the community and beyond. The program emphasizes the importance of interdisciplinary approaches to research.

Student learning outcomes

1. Understand, integrate and apply relevant biomedical biobehavioral concepts and theoretical frameworks to research
2. Comprehend, select and apply the appropriate study design to address specific health issues
3. Critically review the scientific literature by applying sound research knowledge and principles to the review
4. Apply data collection processes and information technology to create, maintain and secure databases and other information
5. Apply ethical principles to study design, data collection and dissemination
6. Devise an analysis plan (statistical methodology) and analyze data using methods appropriate for the study design and type of data to be obtained
7. Identify, interpret and implement relevant laws, regulations and policies related to specific studies and/or programs
8. Plan, incorporate and use appropriate methods for the dissemination and adoption of clinical research findings
9. Manage as a clinical translational research team leader, including the fiscal, personnel, facilities, regulatory assets and scientific integrity of a funded clinical research program
10. Effectively communicate specialist-to-specialist
11. Effectively communicate specialist knowledge to nonspecialists and laypersons

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (<http://www.graduate.vcu.edu>) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin

and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the **academic regulations section for additional information on academic regulations for graduate students.** (<http://bulletin.vcu.edu/academic-regs>)

Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the **academic regulations section for additional information on degree candidacy requirements.** (<http://bulletin.vcu.edu/academic-regs/grad/candidacy>)

Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the **academic regulations section for additional information on graduation requirements.** (<http://bulletin.vcu.edu/academic-regs/grad/graduation-info>)

Apply online at graduate.admissions.vcu.edu (<http://www.graduate.admissions.vcu.edu>).

Admission requirements

Degree:	Semester(s) of entry:	Deadline dates:	Test requirements:
M.S.	Fall	June 15	None

In addition to the general admission requirements of the VCU Graduate School (<http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements>), please note the following:

1. Enrollment is open to VCU junior faculty or residents only.
2. Applicants should be early stage investigators or residents with terminal degrees (e.g. M.D., Ph.D., D.D.S., Sc.D., D.V.M., Ed.D., Pharm.D.).
3. Applicants should have a targeted research interest that is explained in a personal statement accompanying the graduate application.
4. A letter of support from the applicant's department chair is mandatory.
5. A letter of commitment from an academic adviser is mandatory.

Degree requirements

In addition to the VCU Graduate School graduation requirements (<http://bulletin.vcu.edu/academic-regs/grad/graduation-info>), the master's degree can be earned upon completion of 30 credit hours that combine didactic course work and directed research, including a master's capstone project in the form of a peer-reviewed journal article or a grant proposal.

The program provides a sound foundation in clinical and translational research principles and thereby prepares the student to engage in many components of investigative processes. Students are expected to attend the research seminar course each semester they are in the program (and register for the course a minimum of three times) in order to stay abreast of current health and human services research and to develop their communication skills. Additionally, students must complete a course on responsible conduct of research and scientific integrity, which will ensure that students understand the broad ethical implications of biobehavioral and biomedical research, understand what constitutes scientific fraud and misconduct and are aware of their responsibilities as scientists.

When students have reached 27 credit hours of didactic and research course work, they must register for CCTR 700, which may be in one of two forms: an NIH-style grant proposal or a peer-reviewed journal article ready for submission.

This project will be overseen and reviewed by the student's research advisory committee. Students are expected to present their final projects to the committee for acceptance.

Curriculum requirements

Course	Title	Hours
BIOS 543	Graduate Research Methods I	3
BIOS 544	Graduate Research Methods II	3
CCTR 520	Fundamentals of Research Regulation	2
CCTR 630	Design Implications in Clinical Trials	3
CCTR 631	Adaptive Clinical Trials	1
CCTR 690	Research Seminar in Clinical and Translational Sciences (one credit, taken for two semesters)	2
CCTR 697	Directed Research in Clinical and Translational Sciences	9
CCTR 700	Master's Capstone Project	3
OVPR 601	Scientific Integrity	1
or OVPR 602	Responsible Scientific Conduct	
or OVPR 603	Responsible Conduct of Research	
Elective		3
Total Hours		30

The minimum total of graduate credit hours required for this degree is 30.

Electives

Course	Title	Hours
Examples of potential electives include but are not limited to:		
ANAT 615	Techniques in Neuroscience and Cell Biology	
ANAT 620	Scientific Writing and Grantsmanship	

BIOC 530	Biochemistry, Cell and Molecular Biology Module 1: Protein Structure and Function
BIOC 532	Biochemistry, Cell and Molecular Biology Module 3: Central Dogma of Molecular Biology
BIOS 668	Statistical Methods for High-throughput Genomic Data II
BNFO 621	Business and Entrepreneurship Essentials for Life Scientists
CCTR 640	Team Science: Theories and Practice
CCTR 801 & CCTR 802 & CCTR 803	Clinical Practicum and Research Practicum I and Research Practicum II
EPID 571	Principles of Epidemiology
EPID 603	Public Health Policy and Politics
EPID 606	Epidemiologic Methods
MEDC 530	Bioinformatics and Genomics in Drug Research
NURS 773	Perspectives on Research Design

Graduate program director

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Program website: cctr.vcu.edu/education/ms-program (<https://cctr.vcu.edu/education/ms-program>)