Clinical & Translational Science Institute
of Southeast Wisconsin

MEDICAL COLLEGE OF WISCONSIN

Certificate in Clinical and Translational Science

Program Guide

2021-2022

Last Revised: August 2021

Clinical and Translational Science Institute

This program is operated by the Clinical and Translational Science Institute (CTSI) of Southeast Wisconsin. The mission of the CTSI is to develop an integrated, shared home for clinical and translational research and to establish a borderless, collaborative, and investigator/community/patient-friendly, research environment. The CTS Master's and Certificate degree programs fit with the CTSI's strategic goals of providing quality education and training to cultivate the next generation of clinical and translational researchers.

About the CTSI

Our site is one of over 60 hubs nationwide part of the larger CTSA consortium funded by the NIH through the National Center for Advancing Translational Sciences (NCATS). The Southeastern Wisconsin site is a collaboration between 8 partners, including Children's Hospital of Wisconsin, Froedtert Hospital, and the Zablocki VA Medical Center, Versiti Blood Center of Wisconsin, Marquette University, University of Wisconsin-Milwaukee, Milwaukee School of Engineering, and the Medical College of Wisconsin.

Program Personnel

Program Director: Dr. Leonard Egede, MD, MS, legede@mcw.edu

Dr. Egede is a Professor of Medicine, Eminent Scholar, and Chief of the Division of General Internal Medicine within the Department of Medicine at MCW. He also directs the MCW Center for Advancing Population Science (CAPS). He has over 18 years of experience conducting clinical and translational research, with expertise in a range of research methodologies including clinical trial methodology, qualitative research methods, community based participatory research approaches, behavioral intervention design and implementation science. Dr. Egede's research has focused on developing and testing innovative interventions to reduce and/or eliminate health disparities related to race/ethnicity, socioeconomic status, and geographic location for chronic medical and mental health conditions

Program Coordinator: Paul Syvock, psyvock@mcw.edu

Paul Syvock earned his Bachelor's in Business Administration from Chapman University and joined MCW in the fall of 2021. He is responsible for coordinating the program and serves as the initial point of contact for student questions, including course registration, required forms, graduation requirements, etc.

CTS Certificate Program Overview

The 12-credit Certificate in CTS program is designed for individuals who want additional training but may not want to pursue a full master's degree and for those who have already completed professional clinical training but would like additional training in clinical and translational research. The certificate is designed to be completed within one (1) academic year, and students have up to two (2) calendar years to complete all requirements. Students completing the certificate will select from one of four emphasis tracks to complete: Translational Science, Population Science, Health Systems Science, and Community Based Science.

Emphasis Tracks

Translational Science

This track is focused on the foundational principles of the translational process. This "bench-to-bedside" process involves moving discoveries from their basic foundation to clinical settings. Discoveries of focus include diagnostics, therapeutics, medical procedures, and other interventions.

Population Science

There are a variety of factors that can influence health outcomes at a population level, and this track will focus on the relationship between these factors, health, and research. This program will focus on factors such as socioeconomic status, health disparities, social determinants of health, healthcare systems, environment, and policies.

Health System Science

The focus of this track is on principles and processes within the healthcare system. The topics of focus will include delivery of healthcare, how healthcare professionals work together, and improvements that can be made within the system to improve healthcare delivery.

Community Based Science

This track is focused on engaging the community in research being conducted near the end of the translational spectrum. Emphasis is placed on collaboration with community members and organizations to promote engagement in developing community-wide approaches to improve health for all.

Certificate Curriculum

Translational Science	Population Science	Health System Science	Community Based Science
Introduction to Clinical and Translational Science (Fall)	Introduction to Clinical and Translational Science (Fall)	Introduction to Clinical and Translational Science (Fall)	Introduction to Clinical and Translational Science (Fall)
Clinical Statistics I (Fall)	Clinical Statistics I (Fall)	Clinical Statistics I (Fall)	Clinical Statistics I (Fall)
Foundations in Health Services Research (Spring)	Foundations in Health Services Research (Spring)	Foundations in Health Services Research (Spring)	Foundations in Health Services Research (Spring)
Translational Genomics (Spring)	Implementation Science (Spring)	Health Economics (Fall)	Health Disparities Research (Fall)

Degree Completion

Additional information regarding the Thesis committee, proposal, and approval process can be found on the Graduate School website or in the Graduate School Handbook.

Graduation Checklist (MS and Certificate)

1. Intent to Graduate
    a. Submit the Intent to Graduate form, a photograph for the commencement program, and graduation payment to the Graduate School before the following deadlines:
        i. Due December 1 for Spring and Fall Graduates
        ii. Due August 1 for Summer Graduates
2. All items on the Degree Completion Checklist should be submitted to Rebecca Gasper one (1) week before the Graduate School deadline (deadlines are listed in the Academic Calendar)

Certificate students do not need to complete the thesis or binding forms

Course Descriptions

20101 Introduction to Clinical and Translational Science *3 credit hours*. **Fall**
The course will provide the student with a broad understanding of clinical translational science. By the end of the course the student will be able to understand key concepts underlying translational research including methods used to move basic science discoveries to clinical practice and enhancing the health of the public through the provision of evidence-based care. Coursework will include weekly reading of peer reviewed manuscripts, assignments, and a final project. Weekly classes will include discussion of reading and assignments are designed to allow practice of critically reading and planning translational science projects. The course will meet once per week for a total of 18 weeks.

20220 Clinical Statistics I. *3 credit hours*. **Fall**
This is an introductory course in evidence discovery that demonstrates the concepts and application of statistical techniques/tools, given the role of statistics as an information science. The course is intended to inform and provide quantitative skills for graduate students interested in undertaking research in clinical medicine, epidemiology, public health, translational and biomedical sciences. This course emphasizes the basic dogma of statistics namely the central tendency theorem as well as sampling as the core of statistics. With the characterization of statistics as descriptive and inferential, the descriptive arm of statistics is stressed in this course namely summary statistics. Basic probability concepts are covered to stress the importance of sampling prior to reliable inference from the sample data. Sample estimation of the population and the precision (confidence interval) are described as well as the hypothesis testing notion in inferential statistics. The parametric and non-parametric methods are introduced with the intent to describe the methods as applicable to continuous (ratio, interval, cardinal) and discrete (categorical binary, dichotomous) data.

20160 Foundations in Health Services Research. *3 credit hours*. **Spring**
The course will provide the student with a broad understanding of health services research design and methodology, as well as provide the student with the opportunity to engage in a mentored, individualized, in-depth study experience. By the end of the course the student will be able to understand key theories that serve as the foundation of health services research and understand the process of developing a research idea and translating it into an R-series level NIH proposal. Coursework will include weekly reading of peer-reviewed manuscripts, one introductory textbook on health services research, and one introductory textbook on designing clinical research. Weekly classes will include discussion of reading and assignments are designed to allow practice of critically reading and planning health services research projects.

20241 Translational Genomics. *3 credit hours*. **Spring**
The primary goal of this course is to teach students how to develop a research program to ask relevant genetic questions in the clinical setting utilizing the molecular genetics toolbox. To this end, students will be provided with background in molecular genetics strategies and study designs as well as an understanding of common genetics questions emanating from the clinic so that they will be better able to make connections between bench and bedside. In addition, they will be challenged to think creatively and through a translational focus during course-long case studies and group projects.

20260 Introduction to Dissemination and Implementation Science. *3 credit hours*. **Spring**
The course is an introduction to dissemination and implementation and science research methods both theoretical and applied. By the end of the course the student will be able to understand the science of dissemination and implementation, and applied methods for dissemination and implementation. Coursework will include weekly reading of peer-reviewed manuscripts and one introductory textbooks on dissemination and implementation science. Weekly classes will include discussion of reading and course projects are designed to allow practice of critically reading and planning implementation research.

20262 Introduction to Health Economics. *3 credit hours*. **Fall**
The course is an introduction to health economics both theoretical and applied. By the end of the course the student will be able to understand the basics of health economics including the principles and research methodology used to apply economic concepts to the health field. Coursework will include weekly reading of peer-reviewed manuscripts and one introductory textbooks on health care economics. Weekly classes will include discussion of reading and course projects are designed to allow practice of critically reading and conducting health economic research.

20120 Introduction to Health Disparities Research *3 credit hours*. **Fall**
The course is an introduction to health disparities. By the end of the course, the student will be able to understand the relationship between inequities in social determinants of health and health outcomes in various populations. Coursework will include weekly readings from one textbook on multicultural medicine and health disparities as well as peer-reviewed articles to demonstrate the concepts in real-world experiences. Weekly classes will include discussion of the readings. Course projects will be assigned and are designed to allow practice of critically reading and appraising the literature related to applied health disparities research and also to understand the theoretical bases for health equity research. The course will meet once per week for a total of 18 weeks.