Clinical & Translational Science Track

(Competency Based)

Fall Year 1 (9 Credit Hours)

Competency	Hrs	Appropriate Courses*
Biomed Core	(5)	MSCI 601 (Cell and Molecular Biology)
RCR	(1)	MSCI 687 (Ethics and Professionalism)
		BIMS 5126 (Responsible Conduct in Biomed Research)
Statistics/Bioinform.	(2-3)	STAT 651 (Stats)
		STAT 643 (Biostats)
		STAT 661 (Statistical Genetics)
		PHEB 602 (Biostats)
		SBTM 624 (Biostats)
		SBTM 625 (Bioinfomatics)
		BIOL 651 (Bioinfomatics)
		VTPP 638 (Genomic Signals)
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(0-1)	MSCI 629 (Journal Club)

Spring Year 1 (9 Credit Hours)

Cultural/Community Awareness	(3)	PHSB 603 (Social & Behavioral Determinants of Health)
		PHSB 635 (Community Health Develop)
		HLTH 635 (Race, Ethnicity, and Health)
		PHEB 624 (Social Epidemiology)
Research Methodology	(3)	PHEB 605 (Epidemiological Methods)
		VIBS 607 (Applied Epidemiology)
		VIBS 608 (Epidemiologic Methods)
		BIMS 5242 (Genetic Epidemiology)
		PHSB 605 (Social and Behavioral

		Research Methods)
		SBTM 612 (Experimental Techniques in Mol, Cell, and Systems Biol)
		BIMS 5341 (Techniques in Cell & Mol. Biol)
Research Design	(3)	MSCI 611 (Experimental Design for Biomedical Science)
		STAT 606 (Design of Experiments)
		PHEB 603 (Biostatistics II)
		STAT 652 (Statistics in Research II)
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(0)	MSCI 629 (Journal Club)

Summer Year 1 (6 Credit Hours)

Research	(5)	MSCI 691
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(1)	MSCI 629 (Journal Club)

Fall Year 2 (9 Credit Hours)

Research Methodology	(3)	MSCI (Clinical Trials Methodology – To Be Developed)
Electives	(5)	Research project appropriate
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(1)	MSCI 629 (Journal Club)

Spring Year 2 (9 Credit Hours)

Research Methodology	(3)	PHEB 606 (Survival Analysis)
		PHEB 610 (Epidemiological Methods II)

		PHEB 613 (Statistical Methods for Genetics) PHEB 619 (Infectious Disease Epidemiology) PHEB 620 (Cancer Epidemiology) PHEB 621 (Cardiovacular Disease Epidemiology) PHEB 622 (Reproductive and Perinatal Epidemiology) PHEB 627 (Chronic Disease Epidemiology)
Electives	(5-6)	Research project appropriate
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(1)	MSCI 629 (Journal Club)

Summer Year 2 (6 Credit Hours)

Research	(5)	MSCI 691
Data Analysis	(0)	MSCI 681 (Grand Rounds)
Data Analysis	(1)	MSCI 629 (Journal Club)

Subsequent Years (9/9/6 Credit Hours for Fall, Spring, Summer)

Research	(8,8,5)	MSCI 691
Data Analysis	(0,0,0)	MSCI 681 (Grand Rounds)
Data Analysis	(1,1,1)	MSCI 629 (Journal Club)

*Other equivalent courses may be substituted

Clinical and Translational Science (CTS) AdditionalTrack Requirements

The CTS track is a novel training program designed to provide an integrated educational experience that has distinctive research, clinical, and mentoring opportunities for translational medicine. Highlights of this track include:

- A curriculum designed around nationally defined core competencies in knowledge areas fundamental to clinical and translational research. Competencies can be achieved through a combination of didactic course work and/or programmatic activities, and individual training plans will be developed by the trainee's mentoring team. For each competency element there are multiple didactic courses that can fulfill the competency requirement allowing for maximum flexibility to tailor individual student plans and to utilize campus-specific course opportunities.

- Emphasis on team mentoring with each student having co-mentors representing different types of professional training. The co-mentors will be chosen to have a commonality in their research interests and to have diversity in their own training backgrounds (for example, a PhD mentor will typically be paired with a clinical mentor such as an MD, DVM, or DDS). The co-mentors are expected to equally direct the student's dissertation project, and students will be expected to participate in all pertinent activities (e.g. lab meetings, retreats, journal clubs, etc) of each mentor's research group. The track leaders will assist students in developing appropriate mentoring teams.

- Required participation of the students in activities sponsored by the Community of Clinical and Translational Scholars (CCTS). The CCTS is an informal organization of faculty, staff, and trainees who work in or are interested in clinical and translational research. The CCTS will promote and facilitate intellectual interactions by working with the CSTAR Institute to sponsor the following:

  A monthly Grand Rounds in Clinical and Translational Science that showcases state-of-the-art research.

  Two half-day symposia each year (fall and spring) dedicated to clinical and translational research topics. The symposia will feature multiple speakers on a related theme and will allow more in-depth coverage of the selected topics.

  An annual retreat for students and mentors where students present their research.

- Required participation in compliance committee activities. Understanding and

keeping informed about the growing complexity and breadth of regulatory oversight of research activities including human subjects, animals, hazardous materials, recombinant DNA, and infectious agents has become a difficult task for researchers. Far too often, graduate students have only peripheral exposure to these issues and are ill-prepared to deal with compliance regulations at their early independent career stage. Consequently, the CTS track will require its trainees to take the institutional training provided to new faculty members for each of the three compliance committees (IRB, IBC, and IACUC). In addition, trainees will be required to attend at least two meetings of each committee to observe the review process in action and to gain exposure to the types of issues faced by each committee.

- A mandatory clinical experience. To ensure that graduate students have sufficient exposure to and appreciation of the patient side of research, each trainee must complete a formally structured 4- to 12- week clinical experience that complements the student's research focus. These experiences can be arranged at any of our participating clinical partners, typically during the summer session between years 1 and 2 in the program, and will be developed by the student and the advisory team. Additionally, these clinical experiences may include exposure to simulated medical activities in the simulation centers available through the Colleges of Medicine and Nursing.