Transfusion Medicine (TRME)

Director and Adjunct Associate Professor: Johnson
Adjunct Professor: Aster
Adjunct Associate Professor: Friedman, Gottschall, Puca
Adjunct Assistant Professor: LeMense, Sauer
Note: Faculty members and their ranks are for the 2009–2010 academic year.

DEGREE OFFERED
Master of Science in Transfusion Medicine.
Students are admitted under Plan B (non-thesis option) but Plan A (thesis option) may be requested.

SPECIALIZATION S
Business Administration, Education, Science

PROGRAM DESCRIPTION
The Transfusion Medicine program is an ongoing collaboration between Marquette University and BloodCenter of Wisconsin. The first 16 credits must be completed at BloodCenter within two and a half years of starting the program. Additional credits are completed exclusively at Marquette University. Students have the option to enroll at Marquette if it does not interfere with course work at BloodCenter.

APPLICATION REQUIREMENTS
Applicants must submit, directly to the Graduate School:

1. A completed online application form and fee.
2. Official transcripts from all current and previous colleges/universities except Marquette.
3. Three letters of recommendation.
4. (For international applicants only) GRE scores.
5. (For international applicants only) TOEFL score or other acceptable proof of English proficiency.

Note: Applicants must currently be enrolled in the BloodCenter’s independent course of study, the Specialist in Blood Banking program, in order to be eligible to apply for the master of science program in transfusion medicine at Marquette University.

MASTER’S REQUIREMENTS

For Plan B (non-thesis option – default), students must complete 39 or 40 total graduate-level credit hours depending on subspecialty: 18 credit hours in transfusion medicine (TRME) courses, 19 credit hours in the business administration subspecialty OR 18 credits in the education or science subspecialties, plus 3 capstone essay credit hours. When the 18 TRME credits are completed at BloodCenter, the student is required to take a national examination. Students may request Plan A (thesis option) after admission and, if selected, should secure co-direction on their thesis from a member of their subspecialty faculty.

Core Courses
TRME students are required to take the following courses (18 credits), participate in the department colloquium (no credit), complete a capstone (3 credits), and fulfill the requirements for one of the three subspecialties of business administration, education, or science.

TRME 6101 Introduction to Transfusion Medicine (1 cr.)
TRME 6201 Immunohematology I (2 cr.)
TRME 6202 Immunohematology II (2 cr.)
TRME 6220 E essentials of Blood Collection and Testing (3 cr.)

TRME 6301 Management and Education in Transfusion Medicine (3 cr.)
TRME 6401 Anemias and Related Topics (2 cr.)
TRME 6402 Hemostasis and Transplantation (2 cr.)
TRME 6501 Pathophysiology in Transfusion Medicine (2 cr.)
TRME 6998 Transfusion Medicine Project (1 cr.)
TRME 6992 Colloquium in Transfusion Medicine (0 cr.)
TRME 6997 Transfusion Medicine Capstone (3 cr.)

Subspecialty Requirements

3. Science
Students in this subspecialty are required to take three core courses and three electives. Those students who have academic backgrounds sufficient to waive any of the required courses will be allowed to complete additional elective coursework.

Required Courses (9 credits)
BIOL 5806 Immunobiology,
BIOL 8101 Structure and Function of Proteins, and
BIOL 8102 Biochemistry and Function of Nucleic Acids

Elective Courses (9 credits)
BIOL 6001 Radioisotope Safety
BIOL 8201 Developmental Genetics and Epigenetics
BIOL 8202 Eukaryotic Genetics and Chromosome Structure
BIOL 8301 Signaling, Structure and Motility of Eukaryotic Cells
BIOL 8302 Protein Trafficking and Cellular Homeostasis
BIOL 8603 Cell and Molecular Biology of Early Development
BIOL 8702 Systems Physiology
BIOL 8703 Advanced Physiology
BIOL 8801 Bacterial Physiology
BIOL 8802 Microbiology in the Environment
BIOL 8953 Seminar in Biochemistry and Genetics
BIOL 8956 Seminar in Cell and Developmental Biology
BIOL 8957 Seminar in Physiology
CHEM 6201 P Harmonic Methods of Analysis
CHEM 6202 Spectrochemical Methods of Analysis
CHEM 6204 Analytical Separations

Course Descriptions

TRME 6101: Introduction to Transfusion Medicine 1 sem. hr.
An overview of transfusion medicine from basic science concepts to the regulations and quality systems required, along with research concepts and presentation skills. Principles of basic genetics, immunology and red blood cell biochemistry are investigated and applied to blood group serology. An in-depth look at the regulations and accreditations governing the field of transfusion medicine including FDA, CLIA and AABB. Includes an introduction to quality management systems and how they apply to blood collection, donor laboratory testing and patient laboratory testing. Provides an overview of principles of research and an introduction to preparing for oral and written presentation. Offered annually. Prereq: Cons. of prog. dir.
TRME 6201. Immunohematology 1 2 sem. hrs.
An in-depth study of the human blood groups whose antigens are carbohydrate-based to include the ABO and P blood group systems and Lewis system. Discusses history, genetics and biochemistry of the carbohydrate-based antigens. Emphasizes practical aspects of blood management including blood component therapy. Explores their relationship to transfusion therapy and disease epidemiology. Reviews principles of hemagglutination and complement system. Offered annually. Prereq: Cons. of prog. dir.

TRME 6202. Immunohematology 2 2 sem. hrs.
An in-depth study of the human blood groups whose antigens are protein-based to include, but not limited to: Rh, LW, MNS, Duffy, Kidd, Kell and Lutheran blood group systems. Discusses history, genetics and biochemistry of the protein-based antigens. Explores their relationship to transfusion therapy and disease epidemiology. Includes practical experience in problem solving patient or donor typing problems and identifying antibodies to blood group antigens. Offered annually. Prereq: Cons. of prog. dir.

A comprehensive investigation into the theoretical and practical basis involving the selection and processing of blood donors. Presents a thorough understanding of the physiological aspects of blood storage and transport. Emphasizes infectious disease testing as well as the FDA, AABB and CLIA regulations concerning testing. Offered annually. Prereq: Cons. of prog. dir.

TRME 6301. Management and Education in Transfusion Medicine 3 sem. hrs.
A systematic approach in acquiring the fundamentals and principles of planning and implementing an educational program in the clinical setting. Offers practice of presentation skills in a classroom setting and state meeting. Also prepares the transfusion medicine practitioner to manage operational and fiscal affairs in a donor center or transfusion service. Offered annually. Prereq: Cons. of prog. dir.

An advanced study in the pathological mechanisms underlying the production of human disease involving anemias and leukemias. Emphasizes autoimmune hemolytic anemias, drug-dependent immune hemolytic anemias and hemolytic disease of the fetus and newborn. Also discusses parentage testing requirements. Offered annually. Prereq: Cons. of prog. dir.

TRME 6402. Hemostasis and Transplantation 2 sem. hrs.
A study of the procedures performed, as well as a complete understanding of disease process as it relates to serological and molecular detection of bleeding and clotting diseases. An in-depth look at the immune system as it relates to transplantation. A formal study of the aspects of histocompatibility, platelet and neutrophil immunology and bleeding and clotting disorders. Also discusses histocompatibility antigens and nomenclature in relation to transfusion and transplantation. Offered annually. Prereq: Cons. of prog. dir.

TRME 6501. Pathophysiology in Transfusion Medicine 2 sem. hrs.
An advanced study in the pathophysiology of blood transfusion. Reviews indications for blood transfusion including blood component therapy. Also studies adverse events in transfusion medicine. Emphasizes practical aspects of blood management within a transfusion service. Offered annually. Prereq: Cons. of prog. dir.

TRME 6931. Topics in Transfusion Medicine 1-3 sem. hrs.
In-depth study of concepts, theories, and laboratory techniques in the broad area of transfusion medicine which are not covered in regular courses. Offered every term. Prereq: Cons. of prog. dir.

TRME 6952. Colloquium in Transfusion Medicine 0 sem. hrs.
Scholarly reports on selected topics in transfusion medicine/immunohematology. Attendance required of all full-time graduate students. Offered annually. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 6995. Independent Study in Transfusion Medicine 1-3 sem. hrs.
Project and concluding paper that integrates the subspecialty course work with transfusion medicine. Prereq: Cons. of prog. dir.

TRME 6997. Transfusion Medicine Capstone Project 1 sem. hr.
Project and concluding paper on selected subject that integrates Specialist in Blood Banking course work. Offered annually. Prereq: Cons. of prog. dir.

TRME 6999. Master’s Thesis 1-6 sem. hrs.

TRME 9970. Graduate Standing Continuation: Less than Half-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9991. Professional Project Continuation: Less than Half-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9992. Professional Project Continuation: Half-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9993. Professional Project Continuation: Full-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9994. Master’s Thesis Continuation: Less than Half-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9995. Master’s Thesis Continuation: Half-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

TRME 9996. Master’s Thesis Continuation: Full-Time 0 sem. hrs.
Fee. SNC/UNC grade assessment. Prereq: Cons. of prog. dir.

Course descriptions for non-TRME courses are available from the Graduate Bulletin under their respective colleges.

http://www.marquette.edu/grad/current_bulletin.shtml