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 18 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 a TOEFL score or other acceptable proof of English proficiency.

Note: Applicants must currently be enrolled in a baccalaureate degree program at the time of application.

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 1 (2 cr.)
TRME 6202 Immunohematology 2 (2 cr.)
TRME 6220 Essentials of Blood Collection and Testing (3 cr.)
TRME 6997 Transfusion Medicine Capstone (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 6995 Colloquium in Transfusion Medicine (0 cr.)
TRME 6997 Transfusion Medicine Capstone (3 cr.)

Subspecialty Requirements

1. Business Administration

Students are required to take three core courses, four electives, and must meet all prerequisite requirements for the master of business administration classes. Students must also select an area of specialization from the following: organizational change, management, operations and supply chain management, accounting and finance, marketing, or management information systems. Those students who have academic backgrounds sufficient to waive any of the required courses will be allowed to complete additional elective course work.

Required Courses (7 credits)
The required courses ensure a fundamental understanding of the basics of accounting, human resources, and organizational issues in the work place. In addition, the environmental influences courses place a strong emphasis on Marquette’s traditional focus on societal concerns and the social responsibilities of today’s working professional.

ACCO 6000 Accounting Foundations (2 credits),
ECON 6000 Econometrics Foundations (2 credits),
and
HURE 6170 Ethical Issues, Regulatory Environment and Human Resource Management (3 credits)
OR
MANA 6170 Global Environment of Business (3 credits)

Elective Courses (12 credits)
At least four courses must be completed from at least one area of specialization from the classes listed below. Note required and elective lists within each area.

Organizational Management

Required Course (3 credits)
MANA 6100 Organizational Behavior (3 credits)

Elective Course List (9 credits)
HURE 6000 Management (3 credits)
HURE 6170 Ethical Issues, Regulatory Environment and Human Resource Management (3 credits)
HURE 6510 Strategic Compensation (3 credits)
HURE 6535 Diversity in Organizations (3 credits)
HURE 6580 Training and Development (3 credits)
HURE 6931 Topics in Human Resource Management (1-3 credits)
MANA 6110 Leadership, Motivation and Organizational Change (3 credits)
MANA 6125 Negotiation (3 credits)
MANA 6140 International Management (3 credits)
MANA 6191 Topics in Management (1-3 credits)
MANA 6953 Seminar in Management (1-3 credits)
MANA 6995 Independent Study in Management (1-3 credits)
Operations and Supply Chain
Management

Required Course (3 credits)
OSCM 6100 Operations and Supply Chain Management (3 cr.)

Elective Course List (9 credits)
OSCM 6110 Manufacturing Management (3 cr.)
OSCM 6115 Service Operations Management (3 cr.)
OSCM 6120 Quality and Process Management (3 cr.)
OSCM 6140 Globalization and Global Operations (3 cr.)
OSCM 6141 International Operations Management (3 cr.)
OSCM 6150 e-Business and Supply Chain (3 cr.)
OSCM 6150 Supply Chain and Technology Management (3 cr.)
OSCM 6931 Topics in Operations and Supply Chain Management (1-3 cr.)
OSCM 6953 Seminar in Operations and Supply Chain Management (1-3 cr.)
OSCM 6995 Independent Study in Operations and Supply Chain Management (1-3 cr.)

Accounting and Finance

Required Courses (6 credits)
ACCO 6100 Managerial Accounting (3 cr.)
FINA 6100 Financial Management (3 cr.)

Elective Course List (6 credits)
ACCO 6180 Financial Statement Analysis (3 cr.)
FINA 6111 Investments (3 cr.)
FINA 6115 Real Estate Finance Investments (3 cr.)
FINA 6130 Bank Management (3 cr.)
FINA 6140 International Financial Management (3 cr.)
FINA 6160 Financial Derivatives (3 cr.)
FINA 6165 Fixed Income Markets and Securities (3 cr.)
FINA 6170 Investment Management, Ethics and Society (3 cr.)
FINA 6931 Topics in Finance (1-3 cr.)
FINA 6953 Seminar in Finance (1-3 cr.)
FINA 6995 Independent Study in Finance (1-3 cr.)
REAL 6115 Real Estate Investments (3 cr.)

Marketing

Required Course (3 credits)
MARK 6100 Marketing Management (3 cr.)

Elective Course List (9 credits)
MARK 6110 Consumer Behavior (3 cr.)
MARK 6120 Integrated Marketing Communications (3 cr.)
MARK 6130 Customer Relationship Management (3 cr.)
MARK 6140 Global Marketing Strategy (3 cr.)
MARK 6150 e-Marketing Strategy (3 cr.)
MARK 6151 Direct Marketing & E-Commerce (3 cr.)
MARK 6160 Marketing Research (3 cr.)
MARK 6170 Marketing Ethics and Social Responsibility (3 cr.)
MARK 6180 Strategic Marketing (3 cr.)
MARK 6185 Brand Management (3 cr.)
MARK 6190 Marketing and Public Policy (3 cr.)
MARK 6931 Topics in Marketing (1-3 cr.)
MARK 6953 Seminar in Marketing (1-3 cr.)
MARK 6995 Independent Study in Marketing (1-3 cr.)

Management Information Systems

Required Course (3 credits)
INTE 6150 Information Technology Strategy (3 cr.)

Elective Course List (9 credits)
INTE 6150 Independent Study in Information Technology (3 cr.)
INTE 6155 Project Management (3 cr.)
INTE 6156 Privacy and Security (3 cr.)
INTE 6157 Global Information Technology Sourcing (3 cr.)
INTE 6158 Systems Analysis and Design (3 cr.)
INTE 6931 Topics in Information Technologies (1-3 cr.)
INTE 6953 Seminar in Information Technologies (1-3 cr.)
INTE 6995 Independent Study in Information Technologies (1-3 cr.)

2. Education

Students in this sub-specialty 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 course work.

Required Courses (9 credits)
COUN 6051 Introduction to Research Methods in Counselling
OR
EDPL 6000 Introduction to Educational Inquiry,
EDPL 6450 Theories of Learning Applied to Instruction,
and
EDPL 6953 Seminar in Analysis of Teaching

Elective Courses (9 credits)
COPS 8032 Counseling Psychology of Motivation
COPS 8310 Intermediate Research and Statistics
COPS 8320 Measurement and Evaluation
EDPL 6440 Foundations of Curriculum Planning
EDPL 6860 Supervision of Instruction
EDPL 6870 The Theory and Design of Curriculum
EDUC 6040 Introduction to Learning and Assessment

3. Science

Students in this sub-specialty 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 course work.

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 Physical 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. 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.

TRME 6995. Independent Study in Transfusion Medicine 0 sem. hrs.
Time graduated students. Offered annually.
SNC/UNC grade assessment.

TRME 6997. Transfusion Medicine Capstone 3 sem. hrs.
Project and concluding paper that integrates the subspecialty course work with transfusion medicine.
Prereq: Cons. of prog. dir.

TRME 6998. Transfusion Medicine 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 0 sem. hrs.
Master’s thesis for M.S.T.M. candidates. Offered every term.
S/U grade assessment.

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.