Healthcare Technologies Management (HCTM)

Interim Chairperson: Lars E. Olson, Ph.D.
Director of Graduate Studies: Jay R. Goldberg, Ph.D., P.E.
Healthcare Technologies Management Program website (http://www.marquette.edu/engineering/hctm)

Degree Offered
Master of Science, Plan B only

Program Description
The healthcare technologies management program is a collaborative effort between Marquette University and the Medical College of Wisconsin that combines management, technology and health care. The objective of the program is to educate professionals capable of managing the design, development, commercialization and regulatory compliance of diagnostic and therapeutic medical devices, and the implementation, utilization and assessment of hospital-based healthcare technologies.

Healthcare institutions, medical device companies, and healthcare consulting firms have a growing need for skilled professionals with technical and managerial skills, and an understanding of healthcare delivery and regulatory environments. Graduates of the program will have the education and skills needed to pursue career opportunities in clinical, industrial, and consulting environments. The program meets the needs of recent undergraduates seeking an advanced degree as well as employed engineers interested in opportunities to prepare for career advancement.

Elective courses, professional projects and internship opportunities enable students to customize their training to meet individual needs, interests and career goals. With the assistance of a faculty and industry/clinical adviser, students are required to design and complete a professional project in healthcare technologies management. This project will help develop skills that will be useful in the clinical or industrial environment.

The course offerings and schedules are designed to allow working students to pursue this master of science degree on a part-time basis. Full-time students can complete the program in three terms (12 months). Course topics include: technology assessment, ethics of technology utilization, standards and regulations, intellectual property, product development and the environment of healthcare delivery.

See the Graduate School of Management Bulletin's transfer of credit policy (http://bulletin.marquette.edu/schoolofmanagement/academicregulations/#transferofcredit) regarding maximum business course transfer limits and requirements.

Prerequisites for Admission
Applications are accepted from students who have already completed a bachelor’s degree in engineering, science, or a clinical field from an accredited institution with a minimum GPA of 3.000 (on a 4.000 scale).

Application Requirements
Applicants must submit, directly to the Marquette University Graduate School:

1. A completed application form and fee online (http://marquette.edu/grad/future_apply.shtml).
2. Copies of all college/university transcripts except Marquette.*
3. Two letters of recommendation.
4. A statement of purpose stating career goals and how the program will help in reaching those goals.
5. GRE (General Test only), GMAT, or Medical College Admission Test (MCAT). (Waived for individuals with a doctoral degree. Waived for students with a B.S. degree in engineering and a GPA of 3.300 or higher from a regionally accredited university in the United States.)
6. (For international applicants only) a TOEFL score or other acceptable proof of English proficiency.

* Upon admission, final official transcripts from all previously attended colleges/universities, with certified English translations if original language is not English, must be submitted to the Graduate School within the first five weeks of the term of admission or a hold preventing registration for future terms will be placed on the student’s record.

General Information
All admitted students are required to obtain and follow the department's Graduate Student Handbook (http://www.marquette.edu/engineering/biomedical/documents/GradHandbookfinaldraftNov_08.pdf), which contains complete details about the program and degree requirements. This handbook is available through the Biomedical Engineering Office (414) 288-3375 and website (http://www.marquette.edu/engineering/hctm).
Healthcare Technologies Management Master’s Requirements

The healthcare technologies management master’s degree program consists of 37 credit hours. All students are required to take 30.5 credit hours at Marquette University and 6.5 credit hours at Medical College of Wisconsin. When taking courses at Medical College of Wisconsin, students must register for HCTM 6946 Medical College of Wisconsin/HCTM-Joint Degree through MU and for the matching MCW course through MCW.

Required Course work

Marquette University Courses (30.5 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MBA 6020</td>
<td>Business Essentials: Accounting, Economics and Finance</td>
<td>4.5</td>
</tr>
<tr>
<td>MBA 6030</td>
<td>Business Essentials: Marketing, IT and Operations and Supply Chain</td>
<td>4.5</td>
</tr>
<tr>
<td>HCTM 6200</td>
<td>Health Care Technology Assessment</td>
<td>3</td>
</tr>
<tr>
<td>HCTM 6500</td>
<td>Management of Medical Product Development</td>
<td>2</td>
</tr>
<tr>
<td>HCTM 6931</td>
<td>Topics in Health Care Technologies Management</td>
<td>1</td>
</tr>
<tr>
<td>HCTM 6998</td>
<td>Professional Project in Health Care Technologies Management (1 credit hour for three terms)</td>
<td>3</td>
</tr>
<tr>
<td>HEAL 6840</td>
<td>The Environment of Health Care Delivery</td>
<td>2</td>
</tr>
<tr>
<td>MBA 6140</td>
<td>Leading People and Change</td>
<td>1.5</td>
</tr>
<tr>
<td>or MBA 6160</td>
<td>Leadership Coaching and Development</td>
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<tr>
<td>MBA 6110</td>
<td>Strategic Management Introduction</td>
<td>3</td>
</tr>
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</table>

Elective courses - must be approved by program director 6

Medical College of Wisconsin Courses (6.5 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>HCTM 6946</td>
<td>Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14200 Survey of Biomedical Engineering Technology)</td>
<td>3</td>
</tr>
<tr>
<td>HCTM 6946</td>
<td>Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14211 Biomedical Technology Standards and Regulations)</td>
<td>2</td>
</tr>
<tr>
<td>HCTM 6946</td>
<td>Medical College of Wisconsin/HCTM-Joint Degree (and MCW 14212 Ethics of Technology Utilization)</td>
<td>1.5</td>
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Total Credit Hours 37

Courses

HCTM 6200. Health Care Technology Assessment. 3 cr. hrs.
Introduction to health care technology assessment methods for hospital systems and medical businesses encompassing technical, clinical, and business elements. Topics include: clinical results analysis, gold standard comparison, Bland-Altman analysis, sensitivity/specificity analysis, and business trade-off analysis. Extensively uses case studies of present and developing medical technologies as examples of applied assessment methodologies.

HCTM 6500. Management of Medical Product Development. 2 cr. hrs.
Presents requirements for the design, development, and commercialization of new medical devices with an emphasis on management of the product development process. Topics include: formation and management of effective teams, creating an environment conducive to creativity and innovation, managing the R&D/Marketing and R&D/Manufacturing interfaces, motivation of technical personnel, and others.

HCTM 6931. Topics in Health Care Technologies Management. 1 cr. hr.
Focusses on the transition from engineer to manager. Includes communication skills, effective interviewing for managers, conducting performance appraisals, facilitating effective meetings and decision making/problem solving in groups, management and leadership of technical personnel, team building and conflict management. S/U grade assessment.

HCTM 6946. Medical College of Wisconsin/HCTM-Joint Degree. 1-3 cr. hrs.
Registration for this course allows students in the joint Marquette University/Medical College of Wisconsin health care technologies management program to take courses at the Medical College of Wisconsin to fulfill the elective requirements of the program.

HCTM 6995. Independent Study in Health Care Technologies Management. 1-3 cr. hrs.
Prereq: Cons. of prog. dir.

HCTM 6998. Professional Project in Health Care Technologies Management. 1-3 cr. hrs.
During the first term, students identify a project or internship involving the management of health care technologies, and present it to the faculty for approval. Project selection based on the career goals and interests of the student. Faculty and industry/hospital advisers assist students. Project completed during the third term and a final report presented to the faculty.