



Radiological  
Technologies  
University VT

# STUDENT HANDBOOK

**Volume 2, Effective June 2010**

100 E. Wayne Street, Ste. 140

South Bend, IN 46601

Phone 877.411.7238

Fax 574.232.2200

[www.RTUVT.com](http://www.RTUVT.com)

## Table of Content

A Word from the President .....	4
Mission Statement.....	5
Indiana Code Requirement Statement.....	5
2010 – 2011 Academic Calendar .....	6
Teaching Methodology .....	6
Hardware and Software Required by the Student .....	7
Non-Discrimination Policy .....	7
Degree Programs Offered .....	8
Average Class Size .....	8
<b>ADMISSION POLICIES</b> .....	8
<b>Admission Procedure</b> .....	8
<b>Admission Requirements and Recommendations</b> .....	9
Medical Physics and Medical Health Physics.....	9
Medical Dosimetry.....	9
<b>Application Requirements</b> .....	9
<b>Credit for Experiential Learning</b> .....	9
<b>Transfer of Credit</b> .....	10
<b>Grading System</b> .....	10
<b>ACADEMIC POLICIES</b> .....	11
<b>Academic Progress</b> .....	11
<b>Attendance</b> .....	11
<b>Absences</b> .....	11
<b>Academic Integrity Policy</b> .....	12
<b>Anti Hazing Policy</b> .....	12
<b>Dismissal</b> .....	12
<b>Student Records</b> .....	13
<b>Transcripts</b> .....	13
<b>Tuition and Fees</b> .....	13
<b>FINANCIAL POLICIES</b> .....	14
<b>Payment</b> .....	14
<b>Tuition Payment Methods</b> .....	14
<b>Refunds</b> .....	15
<b>STUDENT SERVICES</b> .....	15
<b>Placement Services</b> .....	15
<b>Orientation</b> .....	15
<b>Books and Supplies</b> .....	15
<b>Hours of Operation</b> .....	16
<b>Contact Information</b> .....	16
<b>PROGRAM DESCRIPTIONS</b> .....	16
<b>Course numbering system descriptions</b> .....	16
<b>Masters in Medical Physics</b> .....	16
Program Objectives.....	16
Curriculum.....	17
<b>Masters in Medical Dosimetry</b> .....	17
Program Objectives.....	18
Curriculum.....	18
<b>Masters in Medical Health Physics</b> .....	19
Program Objectives.....	19
Curriculum.....	19
<b>UNIVERSITY STRUCTURE</b> .....	22
<b>Advisory Board Members</b> .....	22
<b>Administrative Control</b> .....	22
<b>Faculty and Staff</b> .....	22
<b>Faculty Listing</b> .....	22
<b>Professional Services</b> .....	22
<b>COURSE CATALOG</b> .....	23
<b>Core and Elective Courses</b> .....	23

**Undergraduate Courses.....26**

## **A Word from the President**

Medical physics and medical dosimetry are not only a very rewarding professions for someone interested in science and medicine, it is currently also a rapidly expanding profession. Students with a solid background in undergraduate physics and mathematics who decide upon a career in medical physics will find their studies of medical physics interesting and enjoyable, and their employment prospects, after completion of studies, excellent.

Medical physics is a branch of physics concerned with the application of physics to medicine, particularly in the diagnosis and treatment of human disease. The main areas of interest at present are in the treatment of cancer by ionizing radiation (radiation oncology), in diagnostic imaging with x-rays, ultrasound and nuclear magnetic resonance (diagnostic radiology), in diagnostic imaging with radionuclides (nuclear medicine) and in the study of radiation hazards and radiation protection (health physics). If people look to you for leadership, if you aspire to take the lead, or if you are responsible for leadership within your organization, we can help you to size up the challenges facing you. We can help you become a better leader.

Medical Dosimetry is designed to prepare students for the technical and theoretical aspects of a career in this field. Students acquire the professional skills of dose calculation, treatment design, and quality assurance through intensive classroom and clinical education under the supervision of educated, experienced Medical Dosimetrists, Physicists, and Radiation Oncologists.

Radiological Technologies University invites you into an educational partnership that will empower you to reach your maximum professional capabilities.

With passion,

A handwritten signature in cursive script that reads "Brent Murphy". The signature is written in black ink and is positioned to the left of the typed name.

Brent Murphy, MS, DABR  
President

## **Mission Statement**

Radiological Technologies University seeks to inspire and cultivate vision through personal involvement of students with faculty and staff toward achieving technical expertise for success in a diverse and changing society. Radiological Technologies University accomplishes this mission through its dedication and commitment to addressing the academic needs of students seeking opportunities to acquire high level skills in specific technical areas for rapid entry into a global workforce.

## **OUR COMMITMENTS**

- ✓ Providing working adults with higher educational and training opportunities that are flexible and accessible.
- ✓ Providing higher educational and training opportunities that are current with technology and career demands.
- ✓ Providing faculty members that have demonstrated expertise in their respective domain, both professionally and academically.
- ✓ Delivering educational support services that meet student life demands and schedules.
- ✓ Building within students a value for life-long learning and education.
- ✓ Teaching students how to evaluate, to analyze, and to synthesize information to become more skillful at creating solutions in a career environment.
- ✓ Providing educational resources in a manner that effectively uses current technology.
- ✓ Offering our programs at times and at places that are accessible to students--on campus, off campus, and at those sites best served by state of the art technologies.

## **Indiana Code Requirement Statement**

This institution is regulated by:

The Indiana Commission on Proprietary Education  
302 W. Washington St. Room E201  
Indianapolis, IN 46204  
Toll Free Number 1.800.227.5695  
or 317.232.1320

## 2010 – 2011 Academic Calendar

### Fall Semester

Application Due Date	Monday, August 16
Semester Start	Monday, September 6
Labor Day Observed	Monday, September 6
Boot Camp Dates	November 15-19
Thanksgiving Break	November 22-26
Semester End	Friday, December 17

### Spring Semester

Application Due Date	Thursday, December 16
Semester Start	Monday, January 10
Martin Luther King Day Observed	Monday, January 17
Boot Camp Dates	March 21-25
Spring Break	March 28 – April 1
Semester End	Friday, May 6

### Summer Session

Application Due Date	Monday, May 9
Semester Start	Monday, June 6
Independence Day Observed	Monday, July 4
Semester End	Friday, August 5

## Teaching Methodology

The Programs for RTU are designed to cover two years, which equates to four semesters (Fall and Spring). Selected courses will be available on an accelerated schedule during the summer sessions as well. Fall and Spring semesters consist of fourteen (14) weeks of instruction and begin in early September and early January respectively. A Clinical Internship is scheduled to follow Fall and Spring semesters during the first year. The Clinical Internship is designed to be completed through a host site the student arranges. The clinical internship is designed to be completed during any six weeks throughout the summer and require 240 clinical hours. Students are given competencies they must complete or observe as well as writing assignments based on their experiences.

Information on required textbooks and course material will be provided prior to the start of the course. Students are responsible for securing their required course materials unless otherwise stated. The syllabus for each course will be provided no later than the first day of the course.

Whether the student chooses to attend in the classroom or online, the course management system, Orbund, is used by RTU to manage communication and distribute all course material. The system allows students to communicate with other students, instructors, teacher's aides, and administrative personnel. During the semester, students are able to retrieve resources for classes, course material, weekly schedules and tasks, lecture videos and supplemental lecture material through the system. Homework assignments and assessments can also be completed online through file upload features and interactive tests and quizzes. Progress reports and comments on assignments from instructors and teacher's aides are also available through the course management system. Students also have the option to schedule study sessions with the teacher's aides to assist them on course material.

Each semester, there is a schedule of courses being offered along with the day and time allotted for each course. Students choosing to attend online go by the day the course is scheduled. For example, if a course is scheduled on Thursday, this means that new material for that course will be available Thursday of each week. In addition, homework assignments and assessments will typically be scheduled for Thursdays. The syllabus for each course notes that these weekly schedules are subject to change. To help students manage their personal and professional lives along with their course work, homework can usually be submitted until 11:55pm EST on the day the assignment is due. Assessments are scheduled ahead of time so the students can make allowances with their schedules. If the times allotted are an issue for a student that cannot be overcome, the student may address this with their instructor or the RTU administrator ahead of time so alternatives may be arranged.

It is the student's sole responsibility to make sure they are checking messages and announcements to make sure they are reviewing and completing all that is required of them. Administrative personnel, instructors, and teacher's aides make sure information is as visible and clear as possible. Open communication between the student and RTU is promoted to make sure there is no ambiguity. Study hall sessions where students discuss and work together on course material are available through online discussion forums managed by the course management system. Study sessions can also be scheduled with the teacher's aides upon request by either party.

Boot camp weeks scheduled during the Fall and Spring semesters are designed to allow students to meet and work together in a classroom setting both with each other and the instructors. Boot camp weeks often include events such as: exams, lectures, student project presentations, tours, lab sessions for some courses, visiting lecturers, study sessions, and review sessions. Attending boot camp is mandatory.

RTU awards credit based on attendance, homework and project submissions, and assessments. Graduate program courses require a minimum grade of 80% (B) in order to receive credit.

### **Hardware and Software Required by the Student**

- ✓ A computer with a minimum of a Pentium processor
- ✓ High speed internet access
- ✓ Ability to stream flash videos
- ✓ Ability to read and create pdf files
- ✓ A minimum of Microsoft® Office 2003 or equivalent
- ✓ Email account
- ✓ Access to a scanner
- ✓ Access to a fax machine
- ✓ Access to a copier
- ✓ Access to a printer

### **Non-Discrimination Policy**

Radiological Technologies University is non-sectarian and does not discriminate with regard to race, creed, color, national origin, age, sex, disability or marital status in any of its academic course activities, employment practices, or admissions policies.

## **Degree Programs Offered**

Masters in Medical Physics (MSMP)	49 credits
Masters in Medical Dosimetry (MSMD)	47 credits
Masters in Medical Health Physics (MSMHP)	52 credits

## **Average Class Size**

Average class size at Radiological Technologies University is 15 which keep the classes small and intensive.

## **ADMISSION POLICIES**

A person's academic ability and potential for success at Radiological Technologies University are the most important factors in the school's admission decision. Full consideration is given to the applicant's academic achievement and aptitude, personal experiences, and motivation. The School does not discriminate on the basis of such factors as national or ethnic origin, race, color, age, gender, sexual orientation, marital status, religion, disability or veteran status.

Students that have submitted an application will receive full acceptance, no acceptance, or conditional acceptance. Conditional acceptance suggests the applicant will receive full acceptance once pre-requisites and/or graduate record examination scores are submitted. Students that have received conditional acceptance to the Medical Physics Program may receive full acceptance to the Medical Dosimetry Program.

The accepted applicant must possess a Bachelor's Degree from an accredited or approved institution or equivalent. Bachelor's Degree equivalency may be recognized if the student can show acceptable undergraduate college work through transcripts and extensive professional level, work experience, or more than four years of acceptable undergraduate college work. The student should have a minimum of three years of significant, full time work experience after obtaining their bachelor's degree or professional qualifications.

International students (and U.S. students with international transcripts) must have a course by course evaluation of international transcripts by an approved private company, such as World Education Services, Josef Silny and Associates, INC, or AACRAO.

Applicants whose first language is not English must submit a minimum TOEFL (Test of English as a Foreign Language) score of 650 (paper-based) or 213 (computer-based) or 79 (internet-based).

## **Admission Procedure**

Radiological Technologies University provides an application through their website. Applications can also be provided via email or fax upon request.

- 1) After the application and all required materials are received, the applicant will be notified within 7-10 days.
- 2) After the applicant is notified, an interview will be scheduled with the Chief Executive Officer via phone conference.
- 3) Course selection, registration, and financing will take place during advising and registration sessions.

## **Admission Requirements and Recommendations**

### **Medical Physics and Medical Health Physics**

#### Program Application Requirements

- ✓ Bachelor's of Science Degree or equivalent
- ✓ A GPA of 2.5 (on a 4.0 scale) for the last degree earned. A 3.0 or higher (on a 4.0 scale) is preferred.
- ✓ General Graduate Record Examination completion
- ✓ TOEFL minimum of 650 if applicant's first language is not English

#### Program Recommendations

- ✓ Statistics (upper level)
- ✓ Human Anatomy and Physiology I & II
- ✓ Calculus – 2 semesters
- ✓ Minor in Physics
  - General Physics (calculus based) – 2 semesters
  - Modern Physics – 1 semester
  - Three additional upper level physics courses such as Quantum Mechanics, Electricity and Magnetism, Nuclear Physics, or Thermodynamics

### **Medical Dosimetry**

#### Program Application Requirements

- ✓ Bachelor's of Science Degree or equivalent
- ✓ A GPA of 2.0 (on a 4.0 scale) for the last degree earned. A 3.0 or higher (on a 4.0 scale) is preferred.
- ✓ General Graduate Record Examination completion
- ✓ TOEFL minimum of 650 if applicant's first language is not English

#### Program Recommendations

- ✓ Human Anatomy and Physiology I & II

### **Application Requirements**

- ✓ Application
- ✓ Official transcripts from all institutions of higher learning
- ✓ Curriculum Vitae/Resume
- ✓ 3 Letters of reference that attest to academic and professional achievements
- ✓ General Graduate Record Examination scores
- ✓ TOEFL scores (if your first language is not English)
- ✓ Application fee of \$35.00

Program requirements are part of the application process and must be completed prior to the start of the program. If an applicant's GPA, work history, and letters of recommendation are strong, they can be admitted prior to completing their GRE with the provision that they must complete it before year 2 of the program. Program recommendations are required in order to complete the program. They are not required prior to acceptance or program study.

### **Credit for Experiential Learning**

Radiological Technologies University does not grant any credit for prior experiential learning.

## **Transfer of Credit**

Radiological Technologies University may accept any course work successfully completed at other approved colleges and universities, if it comparably meets Radiological Technologies University course work requirements.

Should a student wish to transfer credit from Radiological Technologies University to another college or university, the student is advised to first contact the academic institution to which the transfer of credit is sought. All colleges and universities have their own policy regarding acceptances of transfer of credit.

All students applying for the Master degree program must arrange to have original transcripts sent to Radiological Technologies University. These arrangements are to be made at the time of the student's application. Upon receipt of these transcripts of high school completion and college level course/degree completions, the Chief Executive Officer will review the documents and make the assessment of the transferability of each course appearing on the transcripts. As part of that assessment, the Chief Executive Officer will assure that the student's GPA meets or exceeds the minimum required.

Should the transcripts be from overseas, those documents will be photocopied. The copies will be retained by this institution. The originals will be forwarded, by mail, to an independent Transcript Evaluation Service. Upon return of the documents, the CEO will review the correspondence received from the Transcript Evaluation Service and return all received documents to the student's official file. At that time, the Administrator will respond, in writing, to the applicant and document either: the acceptance of the credit or will document the specific courses which are transferable, which are not, and what further action will be required of the student in order to meet the published academic entrance requirements for the selected degree program. Each document will be examined to assure that the work accepted is clearly indicated, by the issuing institution, to be degree appropriate coursework. Questions of the equivalency of credit from overseas institutions will be submitted to the Independent Transcript Evaluation Service.

## **Grading System**

Radiological Technologies University awards letter grades as follows:

A	Excellent	4.0 grade point
B	Average	3.0 grade point
C	Unsatisfactory	2.0 grade point

A minimum GPA of 3.0 is required for successful completion of the program and graduation.

## **ACADEMIC POLICIES**

### **Academic Progress**

Details regarding the academic progress of each student are documented by the institution. All students must maintain satisfactory academic progress as measured by the student's cumulative grade point average. The minimum acceptable GPA (grade point average) is 3.0. Should an individual student's grade point average fall below 3.0, the student will be placed on academic probation. During the ensuing enrollment sessions the student will receive remedial guidance from the Chief Academic Officer or his/her designee, and additional assignments or projects may be required to assure that the student is benefiting from the instruction. The early identification of those students who are experiencing academic difficulty will assist the institution in providing the additional guidance that may provide a remedy.

In any event, should a student's GPA fall below 3.0 the student will be informed that certain minimal corrective actions are required. These include:

- ✓ Full and prompt cooperation and participation in a scheduled completion of assignments
- ✓ Demonstrated compliance with all communication requests issued by the instructor or the administrator.

Students whose GPA improves to or above the 3.0 level will be removed from Academic Probation. Students who do not cooperate in a remedial program or who are otherwise unable to return their cumulative GPA to a 3.0 standing will be so advised and administratively dropped from the program and be issued all refunds as required by the refund policy of the institution. Such refund policy will be in full compliance with that required of the primary oversight agencies of the institution.

### **Attendance**

This institution's policy on attendance is based on the premise that regular communication between the teacher and the student and, also, among students themselves, has significant value in the learning process. Our programs are structured to maximize your interaction with your instructor and peers while maintaining autonomy over your academic schedule. Therefore, each student is afforded the freedom to establish his or her schedule, but regular contact with the instructor and other enrolled students is a requirement that must be met. Such contact will help guide and maintain your steady progress towards the completion of assignments and courses. Such contact better assures we may more readily assist you in resolving any problematic aspects of your program. Instructors are authorized to factor the frequency and adequacy of your communications into the assignment of a grade for any given course.

### **Absences**

Allowances for interruptions in "attendance" due to illness or personal emergency should be handled on a case-by-case basis between the student and instructor. Arrangements to make up work missed and return to an agreed schedule should be initiated by the student and established with the instructor. Absences may be granted for good reasons at the discretion of the University. Students are required to submit a written request for any extended leave of absence.

Frequent absences during a course could be grounds for dismissal. Students will be contacted and counseled before significant measures are taken. Plans will be made for make-up work should it be warranted.

### **Academic Integrity Policy**

RTU has a zero tolerance policy. Integrity is a foundational concept of professional behavior and RTU takes such matters very seriously. In general, if you have to ask if behavior would violate the integrity policy, it probably does.

RTU is committed to educate, implement, support, and enforce sound academic and professional integrity.

#### Collaboration Defined

- Working together on assignments and projects
- Citing literature

#### Cheating Defined

- Not doing the work
- Not doing the work and directly copying
- When it seems like a fine line

If academic dishonesty is suspected, the information will be documented and brought before the President for review. The student or students will be notified that there is a suspicion of academic dishonesty and an investigation will follow. Information retrieved during the investigation process will be evaluated and the student or students involved will be informed of the result.

In the event that academic dishonesty is validated during the investigation process, the individual or individuals involved will be notified of any action RTU chooses to take.

Typically, a first offense will result in the individual or individuals receiving probationary status or dismissal.

### **Anti Hazing Policy**

RTU is dedicated to promoting a safe and healthy campus environment for its students, faculty, staff and visitors. In addition, RTU is committed to promoting an environment that fosters respect for the dignity and rights of all its community members. As such, the University will not tolerate hazing activities by any individuals, groups, or recognized student organizations.

Hazing poses substantial risks to the safety and well being of individual students and the University community. As such, violations of this policy will result in referral to the Office of Administration and possible disciplinary action which may include, but not be limited to, any or all of the following: suspension or expulsion from the University, loss of University recognition and privileges, referral to law enforcement, inability to participate in educational programs, and other educational or remedial action appropriate to the circumstances.

### **Dismissal**

Radiological Technologies University reserves the right to dismiss any student from the program for any of the following reasons:

- ✓ Non-compliance of the rules and regulations of Radiological Technologies University
- ✓ Engagement in any illegal or criminal act

- ✓ Any conduct that brings discredit or embarrassment to Radiological Technologies University
- ✓ Failure to make satisfactory academic progress
- ✓ Failure to meet ones financial obligations to Radiological Technologies University

### **Student Records**

All documentation and records pertaining to students are held in strict confidence as afforded by law. It is also an ethical policy of the Radiological Technologies University to do so. Student records will be retained indefinitely by Radiological Technologies University. Information on students is not available to anyone without one of the following:

- ✓ Written request or release signed by the student
- ✓ A court order
- ✓ An oversight agency's requirement

However, parents of minors and guardians of "tax dependent" students have the right to inspect and challenge the information contained within the records of a specific student. An appointment should be scheduled with School Director if a file inspection is required. A student may access his/her own records by submitting a written request to the school.

### **Transcripts**

Upon written request by the student, Radiological Technologies University will prepare and forward a transcript of the student's record. All requests must include the student's full name, a statement requesting a transcript be issued, the address to which the student would like the transcript sent, and a release signature. Official transcripts will only be released if the student is in good standing with the academic office. Transcripts are sent free of charge within two weeks of the date the request was received.

### **Tuition and Fees**

Radiological Technologies University charges a fixed rate for each degree program. The program amount is based on the cost per credit.

The cost of textbooks and study materials are not included in the tuition.

Masters in Medical Physics (MSMP)	\$50,000	\$1020.41 per credit hour
Masters in Medical Health Physics (MSMHP)	\$50,000	\$961.54 per credit hour
Masters in Medical Dosimetry (MSMD)	\$35,000	\$744.68 per credit hour

Application Fee	\$35.00	(Non Refundable)
IT Service Fee	\$30.00	Per semester
Library Fee	\$20.00	Per semester

Textbooks	The student is responsible for securing all required textbooks unless otherwise stated
-----------	--



programs. All outstanding student account balances are billed directly to the student upon graduation or termination. Failure to satisfy delinquent accounts within a reasonable time period will result in the account being submitted to a collection agency for processing and the student will not be allowed to graduate.

### **Refunds**

The University shall pay a refund to the student in the amount calculated under the refund policy specified in this section. The school will make the proper refund no later than thirty (30) days after the student's written request for cancellation or withdrawal is received by the Administrator.

The following refund policy applies:

1. A student is entitled to a full refund of monies paid if a cancellation request is received by the Administrator in writing on or before the first day of class.
2. A student withdrawing from an instructional program, after starting the instructional program at a postsecondary proprietary institution and attending less than two (2) weeks, is entitled to a refund of seventy-five percent (75%) of the cost of the financial obligation.
3. A student withdrawing from an instructional program, and attending less than four (4) weeks is entitled to a refund of fifty percent (50%) of the cost of the financial obligation.
4. A student withdrawing from an instructional program, after attending four (4) weeks or more, is not entitled to a refund.

## **STUDENT SERVICES**

Faculty and staff work along with the individual student (as much as possible) to aid in making the duration of the program comfortable. All resources that are available to us are utilized to the fullest to assist the student in attaining his/her career goal.

### **Placement Services**

Both on line and personnel placement services are available to all graduates of Radiological Technologies University VT. These services include resume review services and job placement boards. Radiological Technologies University VT does not guarantee employment after graduation.

### **Orientation**

A new student will receive online orientation including computer hardware and software requirements, resources available for successful completion of program requirements, as well as policies and procedures prior to the start of a program. Completion of administrative matters are also taken care of at this time. Each student will receive a written course outline no later than the first day of class.

### **Books and Supplies**

Course material and resources will be provided to the students online. Required textbooks are to be obtained by the student. Students will be informed of what materials are required and where they may purchase them.

**Hours of Operation**

Administrative Offices

Monday – Friday

9:00 am – 5:00pm EST

**Contact Information**

100 E. Wayne Street, Suite 140

South Bend, IN 46601

Phone: 574.232.2408

Toll Free 877.411.7238

Fax: 574.232.2200

**PROGRAM DESCRIPTIONS****Course numbering system descriptions**

MP	Medical Physics core and elective courses
MHP	Medical Health Physics core and elective courses
MD	Medical Dosimetry core and elective courses
BIOL	Biology courses
MATH	Mathematics courses
PHY	Physics courses
200-400	Undergraduate level courses
500-600	Graduate level courses

**Masters in Medical Physics**

The Medical Physicist's role is multi-faceted. The Medical Physicist works closely with Radiation Oncologists, Radiologists, Medical Dosimetrists, Radiation Therapists, X-ray Technicians, Nurses, and Regulators. The Medical Physicist works with radiation delivery devices, imaging devices, and the software associated with both of these units. Medical Physicists ensure that all radiation equipment is safe for patient use. The main objectives of this program are to provide education and clinical training for graduate students and to prepare them for careers in areas of diagnostic imaging, nuclear medicine, radiation therapy, and health physics.

**Program Objectives**

- ✓ Provide the highest level of instruction both academically and clinically in the field of Medical Physics.
- ✓ Provide a comprehensive curriculum that is up to date in this rapidly progressing field of Medical Physics.
- ✓ Provide the highest level of clinical opportunities in the Medical Physics profession.
- ✓ Provide the tools necessary for the graduate to enter the workforce in the field of Medical Physics.
- ✓ Provide an active professional in a related field the opportunity to participate in the program through evening courses, weekend courses, and remote learning opportunities.
- ✓ The program structure, to ensure success of meeting the objectives, will include:
  - A curriculum based on recommendations from the American Association of Medical Physicists in Medicine and fostered after the Medical Physics Curriculum of the following institutions: University of Wisconsin and Purdue University
  - Long term relationships with over 10 clinical institutions to ensure the student is actively engaged, supported, and a positive learning environment is created.

- An aggressive marketing campaign will focus on recruiting dedicated, hardworking students out of the science and engineering programs of the country's best institutions.
- Long term relationships with radiation therapy vendors to include: Varian Medical Systems, Siemens Medical Systems, Phillips, GE Medical Systems, Tomotherapy, Inc. and others to ensure an active engagement with the new technologies.

Evening courses, weekend courses, and remote learning processes will be offered to allow the working professionals the opportunity to succeed in furthering their professional development.

## **Curriculum**

### **Core Courses (40 credits required)**

MP501	Radiation Dosimetry	(4 credits)
MP502	Radiation Biology	(3 credits)
MP503	Physics of Diagnostic Radiology	(3 credits)
MP504	Physics of Nuclear Medicine	(3 credits)
MP505	Physics of Radiation Oncology I	(3 credits)
MP506	Physics of Radiation Oncology II	(3 credits)
MP508	Radiological Instrumentation	(2 credits)
MHP510	Health Physics and Radiation Safety	(3 credits)
MP520	Computer Systems in Medicine	(2 credits)
MP590	Medical and Professional Ethics	(1 credit)
MATH401	Mathematical Methods	(3 credits)
MATH402	Advanced Mathematical Methods	(2 credits)
MP599	Seminars*	(1 credit)
MP699	Clinical Internship	(4 credits)

\*Required each of the four semesters

### **Elective Courses (9 credits required)**

MP611	Physics of Brachytherapy	(3 credits)
MP613	Physics of Nuclear Oncology	(3 credits)
MP615	Physics of Proton Therapy	(2 credits)
MD689	Medical Dosimetry Lab	(1 credit)
MP502	Advanced Radiation Biology	(2 credits)
MP603	Advanced Diagnostic Radiology	(2 credits)
MHP601	Shielding Design	(2 credits)
MP698	Independent Study in Medical Physics	(1-4 credits)

### **Masters in Medical Dosimetry**

Radiation oncology is a health care discipline that uses ionizing radiation for the treatment of cancer and allied diseases. Radiation therapy, one of the three major modalities used in cancer management, is part of the treatment regimen for more than half of all cancer patients.

The Medical Dosimetrist is considered the leader of many Radiation Therapy Departments. The Medical Dosimetrist is actively engaged in patient imaging, simulation, and treatment planning. The Medical Dosimetrist works very closely with Physicians and Radiation Therapists. The plan that is

generated will set the course of how the radiation is delivered. This plan could be the single most important component of a cancer patient's radiation therapy course.

## **Program Objectives**

Medical Dosimetry is designed to prepare students for the technical and theoretical aspects of a career in this field. Students acquire the professional skills of dose calculation, treatment design, and quality assurance through intensive classroom and clinical education under the supervision of educated, experienced Medical Dosimetrists, Physicists, and Radiation Oncologists.

The clinical education component of the program includes experience at other clinical affiliates. Clinical rotations are administered during each year of academic instruction. A well-balanced clinical experience is planned for each student, including daily and weekly quality assurance checks, two-dimensional external-beam treatment and brachytherapy planning, three-dimensional external-beam treatment planning, and IMRT Treatment.

## **Curriculum**

### **Core Courses (38 credits required)**

MD501	Radiation Dosimetry	(4 credits)
MD502	Radiation Biology	(3 credits)
MD505	Dosimetry of Radiation Oncology I	(3 credits)
MD506	Dosimetry of Radiation Oncology II	(3 credits)
MP520	Computer Systems in Medicine	(2 credits)
MHP510	Health Physics and Radiation Safety	(3 credits)
MHP607	Radiation Oncology Department Management	(2 credits)
MHP609	Radiation Oncology Financials	(2 credits)
MD689	Medical Dosimetry Lab*	(1 credit)
MP590	Medical and Professional Ethics	(1 credit)
MATH401	Mathematical Methods	(3 credits)
MP599	Seminars*	(1 credit)
MD699	Clinical Internship	(4 credits)

\*Required each of the four semesters

### **Elective Courses (9 credits required)**

MD611	Dosimetry of Brachytherapy	(3 credits)
MD503	Dosimetry of Diagnostic Radiology	(3 credits)
MD504	Dosimetry of Nuclear Medicine	(3 credits)
MD613	Dosimetry of Nuclear Oncology	(3 credits)
MD615	Dosimetry of Proton Therapy	(2 credits)
MD698	Independent Study in Medical Dosimetry	(1-4 credits)

## **Masters in Medical Health Physics**

The Medical Physicist is responsible for radiation dose calculations and the administration of radiation dose to patients through their work with linear accelerators, sealed radiation sources, and computers.

The Medical Health Physicist is responsible for radiation safety aspects necessary to ensure the safe use of ionizing and non-ionizing radiation sources. Examples of Radioactive sources professionals may be handling or exposed to include radiation units and sources in radiation therapy, X-ray machines in diagnostic radiology, sealed and unsealed radioactive sources used in nuclear medicine and biomedical research, and lasers used in surgery and other areas of the hospital.

### **Program Objectives**

- ✓ Provide the highest level of instruction both academically and clinically in the field of Medical Health Physics.
- ✓ Provide a comprehensive curriculum that is up to date in this rapidly progressing field of Medical Health Physics.
- ✓ Provide the highest level of clinical opportunities in the Medical Health Physics profession.
- ✓ Provide the tools necessary for the graduate to enter the workforce in the field of Medical Health Physics.
- ✓ Provide an active professional in a related field the opportunity to participate in the program through evening courses, weekend courses, and remote learning opportunities.
- ✓ The program structure, to ensure success of meeting the objectives, will include:
  - A curriculum fostered after the Medical Physics Curriculum of the following institutions: University of Wisconsin and Purdue University
  - Long term relationships with over 10 clinical institutions to ensure the student is actively engaged, supported, and a positive learning environment is created.
  - An aggressive marketing campaign will focus on recruiting dedicated, hardworking students out of the science and engineering programs of the country's best institutions.
  - Long term relationships with radiation therapy vendors to include: Varian Medical Systems, Siemens Medical Systems, Phillips, GE Medical Systems, Tomotherapy, Inc. and others to ensure an active engagement with the new technologies

## **Curriculum**

### **Core Courses (43 credits required)**

MP501	Radiation Dosimetry	(4 credits)
MP502	Radiation Biology	(3 credits)
MP503	Physics of Diagnostic Radiology	(3 credits)
MP504	Physics of Nuclear Medicine	(3 credits)
MP505	Physics of Radiation Oncology I	(3 credits)
MP508	Radiological Instrumentation	(2 credits)
MHP510	Health Physics and Radiation Safety	(3 credits)
MHP601	Shielding Design	(2 credits)
MHP603	Non-Ionizing Radiation Safety	(2 credits)
MHP605	Regulations and Licensing	(2 credits)
MP520	Computer Systems in Medicine	(2 credits)
MP590	Medical and Professional Ethics	(1 credit)

MATH401	Mathematical Methods	(3 credits)
MATH402	Advanced Mathematical Methods	(2 credits)
MP599	Seminars*	(1 credit)
MP699	Clinical Internship	(4 credits)

\*Required each of the four semesters

**Elective Courses (9 credits required)**

MP611	Physics of Brachytherapy	(3 credits)
MP613	Physics of Nuclear Oncology	(3 credits)
MP615	Physics of Proton Therapy	(2 credits)
MD689	Medical Dosimetry Lab	(1 credit)
MP602	Advanced Radiation Biology	(2 credits)
MHP602	Reactor Health Physics	(3 credits)
MHP606	Environmental Health Physics	(3 credits)
MP698	Independent Study in Medical Physics	(1-4 credits)



## UNIVERSITY STRUCTURE

### Advisory Board Members

Brent D. Murphy, MS, DABR, Founder and Chairman of the Board  
Melody Sharp, RN, President  
Scott Dube, MS, DABR  
George Sandison, Ph.D., FAAPM  
Len Wright, MBA, Executive in Oncology Services

### Administrative Control

Brent D. Murphy, MS, DABR	Chief Executive Officer
Scott Dube, MS, DABR	Chief Operational Officer
George Sandison, Ph.D., FAAPM	Chief Academic Officer
Elizabeth Datema	Director of Administration
Elizabeth Datema	Director of Student Affairs
Rebecca Fletcher	Director of Marketing
Melody Sharp, RN	Director of Development

### Faculty and Staff

Faculty members are selected on the basis of professional experience, expertise in teaching theoretical and applied subjects, research and case study supervision capabilities, involvement in community and professional affairs, and leadership and role model capabilities essential to student advancement and professional growth.

### Faculty Listing

Brent Murphy, MS, DABR	Nathan Davis, MS, FACS
Scott Dube, MS, DABR	Jack Yang, Ph.D.
George Sandison, Ph.D.	Justin Kling, DC
John Lowden, MS, DABR	Carl Helrich, Ph.D.
Dr. James Wheeler, MD	Brock South, MS

### Staff Listing

Elizabeth Datema	Director of Administration
Elizabeth Datema	Director of Student Affairs
Rebecca Fletcher	Director of Marketing
Brock South, MS	Teaching Assistant
Melody Sharp, RN	Director of Development

### Professional Services

Accounting:	Steven A. Goldberg, CPA
Legal:	Barnes & Thorneburg
Marketing:	Corporate Graphic Solutions

# COURSE CATALOG

## Core and Elective Courses

**MATH401                      MATHEMATICAL METHODS                      3 CREDITS**

This course focuses on the fundamentals of statistical analysis for science. Emphasis is placed on statistic nomenclature, probability evaluation, hypothesis testing and evaluation, experimental design, regression models, and variable/data analysis.

**MATH402                      ADVANCED MATHEMATICAL METHODS                      2 CREDITS**

This course focuses advanced statistical analysis. Emphasis is placed on Multiple Data Comparisons, Clinical Regression Models, Time Series Analysis, Forecasting, Survival Analysis, Clinical Study Design, and Statistical Quality Control.

**MP501 / MD501                      RADIATION DOSIMETRY                      4 CREDITS**

This course focuses on introducing radiation terminology used in radiation dosimetry. Fundamental dose calculation theories are reviewed and an emphasis is placed on clinical and radiation safety related dosimetry techniques.

**MP502 / MD502                      RADIATION BIOLOGY                      3 CREDITS**

This course focuses on introducing fundamental radiation biology concepts. Emphasis is placed on radiation interactions, cell damage, cell survival curves, cell sensitivity and response, factors affecting cell response, tissue kinetics, effects on the fetus, biological models, and radiobiological risk assessment.

**MP503 / MD503                      DIAGNOSTIC RADIOLOGY                      3 CREDITS**

This course focuses on introducing fundamental physics in the medical imaging profession. Fundamental concepts are applied to the system design of each imaging component presented. A special emphasis is placed on the implementation and application of each diagnostic imaging modality.

**MP504 / MD504                      NUCLEAR MEDICINE                      3 CREDITS**

This course focuses on introducing physical principles of radioisotopes and imaging systems used in medicine and biology. Imaging systems are discussed at length with a focus on applying universal imaging concepts such as contrast and resolution to the Anger camera, PET and SPECT scanners. Radiochemical therapy and other radiopharmaceuticals are discussed. Health physics and quality control issues pertinent to nuclear medicine physics are addressed.

**MP505 / MD505                      RADIATION ONCOLOGY I                      3 CREDITS**

This course focuses on applying the fundamental radiation oncology physics concepts to specialty procedures. Emphasis is placed on: Advanced electron beam therapy, electron arc therapy, electron IORT, stereotactic radiosurgery, IMRT, IGRT, IMET, Robotic therapy, Tomotherapy, physics measurement for specialty procedures using different phantoms, and comprehensive quality assurance.



**MP613 / MD613                    NUCLEAR ONCOLOGY                    3 CREDITS**

This course introduces the new emerging field of Nuclear Oncology. Topics covered include: liver microsphere treatment imaging and treatment, I-131 thyroid ablation, and high dose I-131 thyroid ablation, Sr-89 treatment, and new experimental isotopes.

**MP615 / MD615                    PROTON THERAPY                    2 CREDITS**

This course gives the student a background in the fundamental science underlying proton and heavy ion therapy. The radiological physics of these particles is treated first to give the student background necessary for the remainder of the course. The remainder of the course emphasizes the unique challenges faced and opportunities made possible in the use of these types of treatments; these points are presented in contrast with standard x-ray and electron therapy.

**MD689                    MEDICAL DOSIMETRY LAB                    1 CREDIT**

The ability to create a workable treatment plan is the fundamental responsibility of the medical dosimetrist, and is a skill that a medical physicist must keep well in practice. To give the student some experience in treatment plan creation, this course asks the student to create a series of deliverable treatment plans in the form of labs pertaining to each body site. The student will be competent in every aspect of the treatment plan, including common prescriptions and target volumes, dose constraints to critical structures, and plan evaluation.

**MP698 / MD698                    INDEPENDENT STUDY                    1-4 CREDITS**

Independent study courses are generally designed to allow a student to pursue one of their academic or research interests outside of the standard curriculum offered by the school. You will arrange with your selected instructor a schedule, goals, and assessment milestones.

**MP699 / MD699                    CLINICAL INTERNSHIP                    4 CREDITS**

The student participates in a six week clinical internship. The internship is designed to give the student laboratory/clinical instruction in specific areas of medical physics or dosimetry practice. The student keeps a daily journal of their progress on each of the course competencies, to include not only assigned calculations and discussions but also relevant notes and observations on clinical practice.

**MHP510                    HEALTH PHYSICS AND RADIATION SAFETY                    3 CREDITS**

This course focuses on introducing physical principles of radioisotopes and imaging systems used in medicine and biology. Imaging systems are discussed at length with a focus on applying universal imaging concepts such as contrast and resolution to the Anger camera, PET and SPECT scanners. Radiochemical therapy and other radiopharmaceuticals are discussed. Health physics and quality control issues pertinent to nuclear medicine physics are addressed.

**MHP601                    SHEILDING DESIGN                    2 CREDITS**

This course focuses on technical aspects of Radiation Shielding fundamentals. Emphasis is placed on facility shielding for radiation devices to include: x-ray units, CT units, HDR Brachytherapy units, and therapy treatment units.

**MHP602                    REACTOR HEALTH PHYSICS                    3 CREDITS**

This course focuses on technical aspects of reactor health physics. Emphasis is placed on reactor operation, reactor waste, reactor processes, and establishment of the Health Physics Program.

**MHP603**                      **NON-IONIZING RADIATION SAFETY**                      **2 CREDITS**  
This course focuses on introducing fundamental concepts and safety with non-ionizing radiation sources. Emphasis is placed on laser operation and safety, ultrasound operation and safety, MRI operation and safety, safety program development, and other non-ionizing devices.

**MHP605**                      **REGULATIONS AND LICENSING**                      **2 CREDITS**  
This course focuses on the regulatory agencies, the respective regulations, and licensing of radiation devices. Emphasis is placed on learning the working regulations of the NRC, EPA, DOT, and other respective guidelines.

**MHP606**                      **ENVIRONMENTAL HEALTH PHYSICS**                      **3 CREDITS**  
This course focuses on technical aspects of environmental health physics. Emphasis is placed on radon evaluation, environmental monitoring and techniques, dose assessment from water, air, gas, and food, dose and risk assessment.

**MHP607**                      **RADIATION ONCOLOGY DEPARTMENT MANAGEMENT**                      **2 CREDITS**  
This course focuses on management techniques for medical professionals in the radiation oncology field. Emphasis is placed general management techniques and managing radiation oncology professionals. Implementation of a New Cancer Center is also discussed.

**MHP609**                      **RADIATION ONCOLOGY FINANCIALS**                      **2 CREDITS**  
This course focuses on the financial aspects of a Radiation Oncology Department. Emphasis is placed and technical and professional billing, budget development, contract evaluation, and program start-up cost.

### **Undergraduate Courses**

**PHY201**                      **GENERAL PHYSICS I**                      **3 CREDITS**  
This is an introductory course designed specifically for the student who has not taken a calculus-based general physics course, but is preparing for a career in medical physics. The combination of General Physics I and II will be adequate preparation for later upper-level physics courses. The course is designed to develop the ability to think as a physicist, rather than to survey physical science. To this end, the course will deal with the mechanics of particles and rigid bodies, the mechanics of fluids, and thermodynamics. These topics represent an increasing complexity.

**PHY202**                      **GENERAL PHYSICS II**                      **3 CREDITS**  
This is the sequel to General Physics I. A student prepared in the calculus and vector analysis can take this course before General Physics I, but both courses must be taken. The course includes a historical introduction to electromagnetic fields following a detailed treatment of the concepts and laws. Gauss , Oersted s, and Ampere s Laws, and Maxwell s displacement current are central. Energy of the fields and storage elements in circuit theory and practical circuit analysis are treated. Electromagnetic (radio and light) waves are introduced.

**PHY301**                      **MODERN PHYSICS**                      **3 CREDITS**  
This course serves as a transition from the general, historical physics principles covered in a general physics course and the more modern concepts of quantum mechanics, solid state physics, and



professionals, and as part of that end the anatomical component of the course emphasizes cross-sectional anatomy as seen on planar and cross-sectional medical imaging such as CT, PET, and MRI images.

**MATH201**                      **CALCULUS I**    **3 CREDITS**

This course is the first in a series of two designed to familiarize the student with the calculus. This particular course covers the fundamentals of calculus: the derivative and integral. It also covers a selection of topics to prepare the student for the second course in the series.

**MATH202**                      **CALCULUS II**    **3 CREDITS**

This course is the second in a series of two designed to familiarize the student with the calculus. Satisfactory completion of Calculus I is required prior to taking Calculus II. This course starts with a brief introduction of the concepts of vectors, in order to build a discussion of vector-valued functions. This discussion contributes to the development of concepts of three-space necessary to the rest of the course. Partial derivatives, multiple integrals, and line and surface integrals make up the remainder of the course. The latter part of this course is specially applicable to the understanding of physics concepts, and it is the ultimate object of this course to prepare students to use those concepts in their further work in physics.