

# **School of Health Professions**



---

---

# School of Health Professions

---

---

## DEGREES OFFERED

Bachelor of Health Science (BHS) with the following majors:

- Clinical Laboratory Sciences with an emphasis area in *Medical Technology*
- Communication Science and Disorders
- Occupational Therapy\*
- Preprofessional Physical Therapy\*\*
- Diagnostic Medical Ultrasound
- Radiologic Sciences, with emphasis areas in *Radiography or Nuclear Medicine Technology*
- Respiratory Therapy

\*Students can only earn the BHS concurrently with the Master of Occupational Therapy.

\*\*Students can only earn the BHS concurrently with the Master of Physical Therapy

## ADMINISTRATION

Richard E. Oliver, Dean

Kristofer J. Hagglund, Associate Dean of Health Policy and Academic Affairs

P. Kevin Rudeen, Associate Dean of Administrative Affairs and Director for Research

504 Lewis Hall  
(573) 882-8011  
umcshpadvising@missouri.edu

### Advising and Scholarship Contact

SHP Advising Center  
504 Lewis Hall

The School of Health Professions is Missouri's only state-supported health professions school on a campus with an academic health center. It is uniquely positioned to educate highly qualified health care professionals committed to fulfilling the mission of improving society through education, service and discovery in health and rehabilitation sciences. The school is credited with establishing the nation's first baccalaureate degree program in respiratory therapy and the first master's degree program in diagnostic medical ultrasound. Its five departments and seven accredited academic programs have long and distinguished histories. Graduates of the School of Health Professions are nationally recognized leaders in their fields.

The school offers undergraduate degrees with majors in communication science and disorders, diagnostic medical ultrasound, occupational therapy, respiratory therapy, radiologic sciences with emphasis in radiography or nuclear medicine technology, and Clinical Laboratory Sciences with an emphasis in medical technology. The school offers graduate degrees in communication science and disorders, diagnostic medical ultrasound, occupational therapy and physical therapy.

Students gain valuable experience by participating in nationally recognized service centers including The Eldercare Center, The Health Connection, the Speech and Hearing Clinic, Robert

G. Comb's Language Preschool and more than eight hundred fieldwork sites.

## ADMISSIONS

Freshmen and sophomore students are enrolled in the School of Health Professions for academic advisement in order to complete University general education and prerequisite requirements. Students are also advised by faculty and staff of the department in which they have declared a major. Undecided students are advised in the Student Affairs Office. Students should contact the respective department faculty to ensure satisfactory progress toward completion of the prerequisites.

Admission to the University and to the School of Health Professions as a preprofessional student does not constitute admission as a candidate for the Bachelor of Health Science degree. Preprofessional students are admitted to candidacy for the BHS only when they have been selected to participate in the professional component of a program.

### Exploratory Courses

To assist with career decisions, the School of Health Professions offers introductory courses and experiences to provide information and career opportunities in these areas. These courses are listed below:

- HTH PR 1000: Introduction to Health Professions
- NUCMED 1000: Orientation to Nuclear Medicine Technology
- OC THR 1000: Introduction to Occupational Therapy
- PH THR 1000: Introduction to Physical Therapy
- RS THR 1000: Introduction to Respiratory Therapy
- DMU 1000: Introduction to Diagnostic Medical Ultrasound
- C S&D 1000: Intro to Communication Science and Disorders

### Required Entry-level Courses

To be admitted into or continue in the School of Health Professions, all students with 55 or more credits must have completed MATH 1100 or 1120 and ENGLISH 1000, or their equivalents, with grades in the C range or higher.

While completing prerequisite requirements, students must make formal application for admission to the professional component of the program of their choice. Enrollment is limited and is governed by program admission committees. Application to the professional component is also required for transfer students.

In addition to academic record, attributes such as interpersonal skills, motivation, attitude, interest, commitment and knowledge of the field are considered in selecting students to participate in the professional phase of any program. Applicants also are evaluated on school and college aptitude tests, pattern of academic achievement, verbal expression, extracurricular activities and motivation demonstrated by employment and volunteer activities.

To achieve the goals of diversity and equal opportunity, the School of Health Professions encourages the participation of minority and disadvantaged students in its programs.

The application deadlines for the professional component of each program are shown below.

	<b>Application deadline</b>	<b>Classes begin</b>
Communication Science and Disorders	Feb. 15, sophomore	Fall
Physical Therapy	Jan. 24, junior	Summer
Occupational Therapy	Jan. 31, sophomore	Summer
Radiography	Feb. 1, sophomore	Summer
Nuclear Medicine	Feb. 1, sophomore	Fall
Respiratory Therapy	Feb. 1, sophomore	Fall
Diagnostic Medical Ultrasound	Feb. 1, sophomore	Summer
Medical Technology	Feb. 1, junior	Summer

### **School of Health Professions Scholars Guaranteed Admission Program**

High school seniors and first-time college students may apply to the School of Health Professions (SHP) Scholars Guaranteed Admissions Program. Requirements include an ACT minimum composite of 30 or 1320 SAT and rank in the top 10 percent of the high school class. Application materials are available in the School of Health Professions Student Affairs Office.

Students accepted as SHP Scholars who maintain participant status at MU are guaranteed admission into one of the following degree programs:

- Clinical Laboratory Sciences with an emphasis in Medical Technology
- Communication Science and Disorders
- Occupational Therapy
- Diagnostic Medical Ultrasound
- Radiologic Sciences, with emphasis in *Radiography* OR *Nuclear Medicine Technology*
- Respiratory Therapy
- Physical Therapy

### **International Admissions**

Students whose native language is not English should contact the School of Health Professions for requirements.

### **Prerequisite Curriculum Requirements**

See the degree requirements in the following pages for specific course requirements in the various programs. The student is responsible for meeting graduation requirements for the program and the University.

### **Graduation Requirements**

In addition to degree and major requirements, students must complete University graduation requirements, which include University general education requirements.

### **Degree Core Requirements**

The Bachelor of Health Science degree is granted to candidates who have successfully fulfilled all didactic and clinical requirements of the program as described for each area, in addition to all University requirements, including University general education requirements.

In addition to the academic and clinical education requirements of a program, students must possess and exhibit those personal qualities and characteristics that are associated with patient welfare and professional trust. These elements are a part of the overall evaluation process for the professional phase of each program. Should it be determined that these qualities are not present in sufficient degree or that a student does not demonstrate satisfactory growth and progress in these areas, the student is subject to dismissal from the program.

### **Degree with Honors Requirements**

To earn Latin Honors in the School of Health Professions, a student must meet the following requirements:

- 50 graded MU undergraduate credits
- At least a 3.0 MU cumulative GPA
- MU cumulative GPA equal to or greater than 3.5 OR last 50 graded credits at MU equal to or greater than 3.5
- GPA for each level
  - *Cum laude* 3.5
  - *Magna cum laude* 3.7
  - *Summa cum laude* 3.9

## **ACADEMIC REGULATIONS**

### **Time Limits on Credits Earned**

Contact each department for information on time limits.

### **Credits by Examination**

Students with previous training or experience may be allowed to earn advanced-standing credit through challenge or equivalency evaluation in certain programs. Contact the Health Professions Student Affairs Office for information pertaining to the awarding of credit for these exams.

### **Maximum Credits Enrolled**

A student may not enroll for more than 17 credits in a term without permission from the associate dean.

### **Independent Study**

Students must receive prior approval before enrolling in independent study courses.

### **Satisfactory/Unsatisfactory Grades**

A student wishing to enroll in a course on an S/U basis must receive permission from the faculty adviser in his or her department and from the SHP Advising Center.

### **Enrolling in Other Institutions Simultaneously**

Students must receive approval from the SHP Advising Center before enrolling simultaneously at another institution.

### **Student Services**

#### **Advising**

Each student is assigned a faculty adviser in the program of study. The school also maintains a Student Affairs Office staffed by professional academic advisers.

Students should select an area of interest prior to completing the first two years of college. To assist with career decisions, the School of Health Professions offers introductory courses and experiences to provide information and career opportunities in these areas.

## Career Placement

Graduates of programs in the School of Health Professions are highly recruited and frequently hired prior to receiving degrees.

## Other

Liability insurance coverage is provided for students in the clinical component of the professional major. Personal health insurance is not provided but is strongly recommended.

### CLINICAL LABORATORY SCIENCE COURSES

**CL L S 4412—Clinical Laboratory Science Theory, Application and Correlation (4).** Application, evaluation and correlation of laboratory procedures used in the diagnosis and treatment of common disease states. Opportunities for building critical thinking, problem solving, and leadership skills are provided in small group clinical case discussion. Prerequisite: departmental approval, accepted into the Medical Technology Program. Course may be repeated for credit. Graded on A/F basis only.

**CL L S 4414—Chemistry I (4).** Introduction to theory, practical application, technical performance and evaluation of clinical chemistry laboratory procedures. Prerequisites: departmental consent, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4415—Chemistry II (3).** Advanced theory, practical application, technical performance and evaluation of clinical chemistry laboratory procedures. Prerequisites: departmental consent, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4416—Clinical Hematology I (4).** Introduction to the theory, practical application, technical performance and evaluation of hematological and coagulation procedures. Emphasis on correlations of clinical laboratory data with the diagnosis and treatment of anemia, leukemia, and bleeding/clotting disorders. Prerequisites: departmental consent, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4417—Clinical Hematology II (3).** Advanced theory, practical application, technical performance and evaluation of hematological and coagulation procedures. emphasis on the correlation of clinical laboratory data with the diagnosis and treatment of anemia, leukemia, and bleeding/clotting disorders. Prerequisites: departmental consent, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4418—Clinical Microbiology I (4).** Introduction to the theory, practical application, technical performance and evaluation of procedures for isolation, identification and susceptibility testing of infectious disease organisms in humans. Prerequisites: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4419—Clinical Microbiology II (3).** Advanced theory, practical application, technical performance and evaluation procedures for isolation, identification and susceptibility testing of infectious disease in humans; bacteriology, mycology, parasitology, virology and serology and correlation of data with diagnosis and treatment. Prerequisites: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4420—Clinical Immunology (1).** Theory, practical application, and evaluation of immunological components; principles and methods used to assess immunologically-related disorders, including hypersensitivity reactions, autoimmune, immunoproliferative and immunodeficiency disorders, tumors and transplantations. Prerequisites: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4422—Immunohematology I (3).** Introduction to the theory, practical application, technical performance and evaluation of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components. Prerequisites: departmental approval, accepted into the Medical Terminalogy Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4423—Immunohematology II (2).** Advanced theory, practical application, technical performance and evaluation of blood bank procedures required for transfusion of blood and blood components and for handling and storage of blood and blood components. Prerequisites: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4424—Phlebotomy (1).** Theory, practical application, technical performance and evaluation of procedures used in collecting, handling and processing blood specimens. Prerequisites: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded on S/U basis only.

**CL L S 4426—Body Fluid Analysis (1).** Theory, practical application, technical performance and evaluation of procedures used in the analysis of urine and other body fluids, including cerebrospinal, synovial, serous, seminal, amniotic and feces. Prerequisites: departmental consent, accepted into the Medical Technology Program. May be repeated for credit. Graded on A/F basis only.

**CL L S 4970—Clinical Laboratory Management (2).** Theory, practical application, technical performance and evaluation of laboratory management principles and associated models. Opportunities for building critical thinking, problem-solving, and management/professional leadership skills are provided. Prerequisite: departmental approval, accepted into the Medical Technology Program. May be repeated for credit. Graded

### HEALTH PROFESSIONS COURSES

**HTH PR 1000—Introduction to the Health Professions (1).** Acquaints students with various health professions careers and the aptitudes and abilities needed for different careers. Presents basic information about the U.S. health care system. Assists with career planning and selection of appropriate preparation programs. Graded on A/F basis only.

**HTH PR 1001—Topics in Health Professions (1-3).** Organized study of selected topics in Health Professions. Particular topics and credit may vary each semester. Prerequisite: instructor's consent.

**HTH PR 2001—Topics in Health Professions (cr.arr.)** Organized study of selected topics in health professions. Particular topics and earnable credit may vary from semester to semester. Prerequisite: sophomore standing and instructor's consent.

**HTH PR 2190—Medical Terminology (3).** Medical terminology based on a word building system. This course is intended for students majoring in health professions, nursing and other helping professions, pre-med and biology. Prerequisite: sophomore standing.

**HTH PR 2960—Special Readings in Health Professions (1-3).** Directed study of literature and research reports in the health-related professions. Prerequisite: instructor's consent.

**HTH PR 3200—Essentials of Pathology (2).** Provides basic foundation for understanding etiology of disease with emphasis on systemic pathology for non-medical students. Prerequisites: general biology and one course in either physiology or anatomy.

**HTH PR 3250—Human Kinesiology (3).** (same as Physical Therapy 4250 and Occupational Therapy 4250). Study of principles of physical laws, biomechanics and anatomic structure relative to human movement. Application through analysis of daily functional performance, exercise and sport. Prerequisite: anatomy.

**HTH PR 4001—Topics in Health Professions (1-3).** Organized study of selected topics. Subjects will vary from semester to semester.

**HTH PR 4085—Problems in Health Professions(cr.arr.)** Prerequisite: instructor's consent.

**HTH PR 4300—Health Care in the United States (3).** Overview of financing, structure, and outcomes in the U.S. health care system. Contemporary health care issues, policy, and politics will be addressed. Graded on A/F basis only.

**HTH PR 4300H—Health Care in the United States - Honors (3).** Overview of financing, structure, and outcomes in the U.S. health care system. Contemporary health care issues, policy, and politics will be addressed. Graded on A/F basis only. Honors eligibility required.

**HTH PR 4310—Health Policy for the Health Professional (1-3).** Seminar to facilitate understanding of health policy, the legislative process, and politics. Emphasis on health professions, including issues of workforce, funding, and advocacy in the context of current health policy issues.

# Department of Cardiopulmonary and Diagnostic Sciences

Diagnostic Medical Ultrasound  
School of Health Professions  
409 Lewis Hall  
(573) 884-2994  
Director: Moses Hdeib

Medical Technology  
School of Health Professions  
303 Lewis Hall  
(573) 884-2329  
Director: Richard E. Oliver

Nuclear Medicine  
School of Health Professions  
607 Lewis Hall  
(573) 884-7843  
Director: Glen Heggie

Radiography  
School of Health Professions  
620 Lewis Hall  
(573) 884-2623  
Director: Patricia Tew

Respiratory Therapy  
School of Health Professions  
614 Lewis Hall  
(573) 882-8422  
Director: Rosemary Hogan

## FACULTY

**ASSOCIATE PROFESSOR** R. E. Oliver  
**ASSISTANT PROFESSOR** M. W. Prewitt  
**CLINICAL ASSOCIATE PROFESSOR** R. G. Hogan,  
L. Weber-Hardy  
**CLINICAL ASSISTANT PROFESSOR** E. M. Hdeib,  
G. D. Heggie, K. S. Moss, M. C. Sebacher, P. A. Tew  
**CLINICAL INSTRUCTOR** C. W. Camp, D. W. Clem,  
D. L. Evans, M. M. Hdeib, D. R. Myers, J. M. Roy,  
P. D. Situ, S. L. Strickland

The Department of Cardiopulmonary and Diagnostic Sciences offers the Bachelor of Health Science (BHS) with majors in Clinical Laboratory Science (with an emphasis area of Medical Technology), Diagnostic Medical Ultrasound, Respiratory Therapy, and Radiological Sciences. Students majoring in Radiological Sciences must complete emphasis areas in Radiography or Nuclear Medicine Technology.

### Major Program Requirements - Radiologic Sciences (BHS)

There are two active emphasis areas in the radiologic sciences: Radiography and Nuclear Medicine. Students planning to

complete one of these emphasis areas should contact the program director to determine eligibility for admission.

### Emphasis in Radiography

Radiographers are highly skilled health professionals who work closely with physicians specializing in the use of x-rays. They provide patient services using a variety of imaging modalities such as general x-ray, computerized axial tomography, magnetic resonance imaging, mammography and bone densitometry. The radiographer must apply the principles of radiation protection, must be competent in the use and maintenance of delicate equipment and must have the ability to deal with patients and medical professionals.

Accreditation of the program is granted by the Joint Review Committee on Education in Radiologic Technology.

Students transferring from other institutions should contact the program director to select appropriate prerequisite courses for admission. Students must complete these courses in addition to major, degree and University requirements, including University general education requirements.

### Emphasis core requirements

<b>Prerequisites for radiography emphasis .....</b>	<b>49</b>
HTH PR 1000: Intro to HP.....	1
MATH 1120: College Algebra .....	3
RU SOC 1000: Rural Sociology OR	
SOCIOLOGY 1000: Sociology .....	3
BIO SC 1010 & 1020 or 1500: General Biology	
(lec/lab) .....	5
PSYCH 1000: General Psychology .....	3
CHEM 1310 & 1320: General Chemistry.....	5
ENGLSH 1000: Exposition .....	3
HIST 1100/1200/POL SC 1100/1700/Am Hist/Govt	
or PS.....	3
PHYSICS 1210: Physics .....	4
COMM 1200: Intro to Speech Communication.....	3
PTH&AS 2201 & 2203: Elements of Anatomy	
(lec/lab) .....	5
MPP 3202: Elements of Physiology.....	5
CS 1020 or C & I 1210 & 4450: Microcomputers.....	3
CP&D 2190: Medical Terminology .....	3

### Core requirements for radiography emphasis

RA SCI 3120: Fundamentals of Radiography.....	3
RA SCI 3130: Basic Radiographic Skills .....	2
RA SCI 3110: Radiographic Positioning I .....	2
RA SCI 3140: Principles of Radiographic Exposures I .....	3
RA SCI 3180: Radiographic Positioning II .....	2
RA SCI 3160: Radiologic Physics .....	3
RA SCI 3941: Clinical Education I.....	3
RA SCI 3150: Radiologic Pharmacology .....	3
RA SCI 3170: Imaging Modalities.....	2
RA SCI 3190: Radiographic Positioning III .....	3
RA SCI 3942: Clinical Education II.....	3
CP&D 3460: Cardiovascular & Pulmonary Diagnostic	
Application I.....	3
RA SCI 4110: Sectional Anatomy .....	3
RA SCI 4943: Clinical Education III .....	3
CP&D 4460: Cardiovascular & Pulmonary Diagnostic	
Appl II .....	3
RA SCI 4944: Clinical Education IV .....	3
RA SCI 4303: Radiation Safety .....	3
RADIOL 4328: Intro to Radiation Biology .....	3
CP&D 4955: Introduction to Research .....	2

CP&D 4440: Organization & Administration .....	3
RA SCI 4947: Radiography Overview .....	3
RA SCI 4945: Clinical Education V .....	3
RA SCI 4980: Imaging Pathology .....	3
RA SCI 4140: Magnetic Resonance Imaging: Physics & Proc OR RA SCI 4150: Computed Tomography: Physics & Procedures .....	5

### Professional Certification

Upon completion of the program, students are eligible to sit for the national certifying exam given by the American Registry of Radiologic Technologists.

### Emphasis in Nuclear Medicine Technology

The nuclear medicine technologist is concerned with the use of radioactivity for patient diagnosis, monitoring of treatment and in some cases the treatment itself. The nuclear medicine technologist uses radioactive compounds to perform body function studies, collect images of internal organs and analyze biological specimens.

The curriculum incorporates the fundamentals needed for specialization as a nuclear medicine professional. Accreditation of the program is granted by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology.

The following are MU courses. Students transferring from other institutions should contact the program director to select appropriate prerequisite courses for admission. Students must complete these courses in addition to major, degree and University requirements, including University general education requirements.

### Emphasis core requirements

#### Prerequisites to the nuclear medicine

<b>emphasis .....</b>	<b>44</b>
BIO SC 1100 & 1200 or 1500 .....	5
CHEM 1310: General Chemistry I .....	2
CHEM 1320: General Chemistry II .....	3
CHEM 1330: General Chemistry III .....	3
CHEM 4600: Introduction to Radiochemistry .....	3
ENGLSH 1000: Exposition and Argumentation .....	3
MATH 1100: College Algebra .....	3
MATH 1400: Calculus for Social and Natural Science I .....	3
PSYCH 1000: Intro to Psychology .....	3
PHYSCS 1210: College Physics I .....	4
PTH&AS 2201: Elementary Anatomy Lecture .....	3
PTH&AS 2203: Elementary Anatomy Laboratory .....	2
NUCMED 1000: Orientation to Nuclear Medicine .....	1
RADIOL 4328: Introductory Radiation Biology .....	3
RA SCI 4303: Radiation Safety .....	3
SOCIOL 1000: Intro to Sociology OR ANTHRO 1000: Intro to Anthropology .....	3
CP&D 4480: Clinical Ethics .....	3

#### Core requirements for the nuclear medicine

<b>emphasis .....</b>	<b>60</b>
CP&D 2190: Medical Terminology .....	3
CP&D 4955: Introduction to Research .....	2
MPP 3202: Elem of Physiology .....	5
STAT 1200: Introductory Statistical Reasoning OR STAT 1300: Elementary Statistics OR ESC PS 4170: Introduction to Educational Statistics .....	3
NUCMED 4329: Radiopharmaceuticals in Nuclear Medicine .....	3
PHYSCS 1220: College Physics .....	4

NUCMED 3263: Morphological Correlations in Nuclear Medicine I .....	3
NUCMED 3256: Clinical Nuclear Medicine I .....	2
CP&D 3460: Cardiovascular Pulmonary Diagnostic Application I .....	3
CP&D 4460: Cardiovascular & Pulmonary Diagnostic Appl II .....	3
NUCMED 4940: Clinical Education in Nuclear Medicine In Vivo I .....	6
NUCMED 4268: Clinical Nuclear Medicine II .....	2
NUCMED 4327: Nuclear Medicine Instrumentation .....	3
NUCMED 4941: Clinical Education in Nuclear Medicine In Vivo II .....	7
NUCMED 4232: Clinical Education in Nuclear Medicine In Vitro .....	3
NUCMED 4299: Morphological Correlations in Nuclear Medicine II .....	3
NUCMED 4269: Clinical Nuclear Medicine III .....	2
NUCMED 4330: Principles of Positron Emission Tomography .....	3

Students are strongly encouraged to take the following courses:

CP&D 4440: Organization and Administration .....	3
CHEM 2100: Organic Chemistry I OR CHEM 3200: Quantitative Methods of Analysis with Lab .....	3-4

### Professional Certification

Upon completion of the program, students are eligible to take the national certifying examinations given by the Nuclear Medicine Technology Certification Board. Students may also pursue credentials offered through the American Registry of Radiologic Technologists.

### Major Program Requirements - Diagnostic Medical Ultrasound (BHS)

The Diagnostic Medical Sonographer uses high-frequency sound waves to perform a variety of diagnostic examinations. The sonographer performs an essential role in the process of data gathering and synthesis required to reach a diagnosis. Ultrasound is a profession requiring a high degree of independence, skill, judgment and knowledge. Sonographers work in hospitals, clinics, private physician offices and other medical facilities performing examinations in their areas of specialization. The Diagnostic Medical Ultrasound (DMU) Program offers multiple educational options.

Any student interested in applying to the DMU Program should seek advisement as soon as possible to assure that all general education and prerequisite courses including the criteria for application have been completed.

Students must complete the courses listed below in addition to degree and University requirements, which include University general education requirements.

### Major core requirements

<b>Prerequisites .....</b>	<b>47</b>
PSYCH 1000: General Psychology .....	3
CHEM 1100: Atoms and Molecules .....	3
COMMUN 1200: Intro to Speech Communication .....	3
BIO SC 1010 and 1020: General Prin & Concepts of Biology and Lab .....	5

ENGLSH 1000: Exposition .....	3
HIST 1100 or 1200/POL SC 1100 AM HIST/Polit Sci.....	3
SOCIOL 1000: Introduction to Sociology OR	
RU SOC 1000: Rural Sociology .....	3
PHYSCS 1210: College Physics.....	4
PTH&AS 2201 and 2203: Elementary Anatomy and	
Laboratory .....	5
ESC PS 4170: Introduction to Educational Statistics .....	3
HTH PR 2190: Medical Terminology .....	3
MATH 1100 OR 1120: College Algebra .....	3
MPP 3202: Elements of Physiology.....	5
DMU 1000: Introduction to Diagnostic Medical	
Ultrasound .....	1

**Core requirements.....84**

DMU 4200: Principles of Diagnostic Medical	
Ultrasound .....	3
DMU 4234: Clinical Pathophysiology .....	3
DMU 4309: Normal Ultrasound Clinical.....	5
DMU 4311: Pathological Images Ultrasound .....	3
DMU 4312: Cross Sectional Anatomy.....	3
DMU 4313: Ultrasound Physics .....	3
DMU 4314: Abdominal Ultrasound.....	5
DMU 4315: Ultrasound Instrumentation .....	3
DMU 4318: Gynecology Ultrasound.....	3
DMU 4320: Obstetrics Ultrasound .....	3
DMU 4322: Superficial Organs Ultrasound.....	3
DMU 4325: Ultrasound Clinical Pharmacology &	
Contrast Agents .....	3
DMU 4326: Vascular Ultrasound Physics/Instr/	
Hemodynamics.....	3
DMU 4330: Vascular Ultrasound Lab.....	3
DMU 4332: Vascular Ultrasound.....	4
DMU 4338: Cardiac Ultrasound Physics/Instr/	
Hemodynamic .....	3
PHIL 4510: Medical Ethics OR	
CP&D 4400: Clinical Ethics .....	3
DMU 4941: Ultrasound Clinical .....	7
DMU 4943: Ultrasound Clinical III.....	6
DMU 4944: Vascular Ultrasound Clinical IV .....	7
DMU 4993: Ultrasound Clinical II .....	8

**Professional Certification**

Upon successfully completing the requirements of the program, BHS graduates are eligible to apply to the American Registry of Diagnostic Medical Sonographers (ARDMS) for certification in Abdomen, Obstetrics and Gynecology and Vascular Technology.

**Major Program Requirements - Clinical Laboratory Science with an emphasis in Medical Technology (BHS)**

Medical Technologists make a valuable contribution to patient care by developing, performing and evaluating clinical laboratory procedures. Certified Medical Technologists are skilled scientists who work with the kinds of tests that would confirm a case of diabetes, verify a potentially dangerous drug level, monitor the level of anti-rejection drugs in transplant patients, determine compatibility for organ donation, detect cases of cancer or leukemia, identify the causative microorganism in a blood or wound infection, or detect a cancerous tumor with DNA techniques. Medical Technologists have various levels of responsibility - as staff technologists, research technologists, supervisors, managers, or educators and can work in a variety of settings, including hospitals, clinics, laboratories, and research centers.

The Clinical Laboratory Science (CLS) program at MU is a unique collaboration with the University of Nebraska Medical Center in Omaha. The CLS program includes three years of prerequisite coursework, requiring 16 hours of both Biology and Chemistry, and 11 months in the professional phase of the CLS program. The professional year begins in June, with 11 weeks of coursework and clinical lab rotations in the University of Nebraska's Medical Center in Omaha. After the initial 11 weeks in the program, students return to Columbia and complete the CLS coursework online and clinical laboratory rotations at Boyce and Bynum Pathology Laboratories, P.C. Students graduate with a Bachelor of Health Science degree in Clinical Laboratory Science from the University of Missouri-Columbia with a Certificate in Medical Technology from the University of Nebraska Medical Center.

**Professional Certification**

Upon completion of the program, students are eligible to take the Medical Technology Licensure examination given by the American Society for Clinical Pathology (ASCP).

**Major core requirements**

**Prerequisites.....85**

ENGLSH 1000: Exposition and Argumentation.....	3
COMMUN 1200: Introduction to Speech Communication..	3
MATH 1100 or 1120: College Algebra .....	3
SOCIAL SCIENCES REQUIREMENT.....	3
HIST 1100: Survey of American History to 1865 OR	
HIST 1200: Survey of American History Since 1865 OR	
POL SC 1100: American Government	
SOCIAL SCIENCE/BEHAVIORAL SCIENCE	
REQUIREMENT .....	6
STAT 1200: Introduction to Statistical Reasoning OR	
STAT 1300: Elementary Statistics.....	3
HUMANITIES ELECTIVES.....	6
WRITING INTENSIVE ELECTIVE* .....	3
ELECTIVES .....	9
MPP 3202: Elements of Physiology.....	5
BIOLOGICAL SCIENCES REQUIREMENT	
BIO SC 1500: Introduction to Biological	
Systems w/Lab .....	5
BIO SC 2200: General Genetics .....	4
BIO SC 2300: Introduction to Cell Biology .....	4
MICROB 3200: Introduction to Medical Microbiology	
and Immunology .....	4
MICROB 4304: Immunology .....	3
BIOCHM 3630: General Biochemistry .....	3
PHYSICAL SCIENCES REQUIREMENT	
CHEM 1310: General Chemistry 1.....	2
CHEM 1320: General Chemistry 2 w/Lab.....	3
CHEM 1330: General Chemistry 3 w/Lab.....	3
CHEM 2050: Intro to Organic Chemistry OR	
CHEM 2100: Organic Chemistry 1.....	3-5
CHEM 3200: Quantitative Methods of Analysis .....	4
CHEM 3700: Undergraduate Seminar in	
Chemistry (WI) .....	3

**Core Requirements .....35**

CL L S 4412: Clinical Laboratory Science .....	4
CL L S 4414: Clinical Chemistry I.....	4
CL L S 4415: Clinical Chemistry II .....	3
CL L S 4416: Clinical Hematology I .....	4
CL L S 4417: Clinical Hematology II.....	3
CL L S 4418: Clinical Microbiology I .....	4
CL L S 4419: Clinical Microbiology II.....	3
CL L S 4420: Clinical Immunology.....	1
CL L S 4422: Immunohematology I .....	3

CL L S 4423: Immunohematology II .....	2
CL L S 4424: Phlebotomy .....	1
CL L S 4426: Body Fluid Analysis .....	1
CL L S 4970: Clinical Laboratory Management .....	2

\*Depending on course, may count toward another requirement in addition to the Writing Intensive Requirement.

### Major Program Requirements - Respiratory Therapy (BHS)

Respiratory care is a diverse, growing, health profession with extensive patient contact, often with the critically ill. Respiratory therapists administer prescribed respiratory care and life support to patients with deficiencies and abnormalities of the cardiopulmonary system. They work in many settings requiring a considerable degree of independent clinical judgment under the direct or indirect supervision of a physician.

The two-year, professional phase of the program begins the fall semester of the junior year. Students complete lecture and laboratory courses designed to develop knowledge and skills necessary for application to the clinical settings. Required courses in management, research, respiratory physiology and pharmacology, pathology and cardiology are integrated with the respiratory therapy curriculum. The final semester of the program consists entirely of clinical externships. Students may select affiliated hospitals outside the Columbia area for this clinical experience or remain on campus at MU Health Care. The MU RT program has an extension site at St. John's Mercy Hospital for those students living in the St. Louis area.

Accreditation of the program is granted by the Committee on Accreditation for Respiratory Care (CoARC) in collaboration with the Commission on Accreditation of Allied Health Programs (CAAHEP).

The following are MU courses. Students transferring from other institutions should contact the program director to select appropriate courses for admission. Students must complete the courses listed below in addition to degree and University requirements, which include University general education requirements.

#### Major core requirements

<b>Prerequisites.....</b>	<b>36</b>
BIO SC 1010 and 1020 or BIO SCI 1500: General Biology .....	5
CHEM 1310 and 1320: General Chemistry I and II .....	5
CP&D 4480: Clinical Ethics .....	3
ENGLSH 1000: Exposition .....	3
ESC PS 4170: Introduction to Educational Statistics .....	3
HIST 1100 OR 1200 or POL SC 1100/1700 Hist, Govt or PS .....	3
HTH PR 2190: Medical Terminology .....	3
MATH 1120: College Algebra .....	3
MICROB 3200: Intro to Medical Microbiology & Immunology .....	4
MPP 3202: Elem of Physiology .....	5
PHYSCS 1210: College Physics .....	4
PSYCH 1000: General Psychology .....	3
PTH&AS 2201 and 2203: Elementary Anatomy and Laboratory .....	5
RS THR 1000: Introduction to Respiratory Therapy .....	1
SOCIOL 1000: Introduction to Sociology OR ANTHRO 1000: General Anthropology .....	3

#### Core requirements..... 74-76

CP&D 3460: Cardiovascular & Pulmonary Diagnostic Appl I.....	3
CP&D 4440 or RS THR 4440: Organization & Administration.....	3
CP&D 4460: Cardiovascular & Pulmonary Diagnostic Appl II .....	3
CP&D 4955: Intro to Research .....	2
HTH PR 3200: Essentials of Pathology .....	2
RS THR 3220: Equipment & Techniques .....	5
RS THR 3280: Cardiopulmonary Pharmacology I .....	1
RS THR 3420: Principles of Mechanical Ventilation .....	4
RS THR 3440: Advanced Skills & Diagnostic Test Lab ..	3
RS THR 3480: Cardiopulmonary Pharmacology II.....	1
RS THR 3941: Clinical Practice I .....	2
RS THR 3942: Clinical Practice II.....	4
RS THR 3943: Clinical Practice III .....	2
RS THR 4020: Perinatal/Neonatal Respiratory Care.....	3
RS THR 4040: Respiratory Pathophysiology .....	5
RS THR 4220: Community and Patient Education I .....	1
RS THR 4240: Pulmonary Rehabilitation .....	3
RS THR 4420: Pediatric Respiratory Care .....	3
RS THR 4460: Clinical Respiratory Therapy I.....	3
RS THR 4920: Community and Patient Education II... 1-3	1-3
RS THR 4940: Clinical Practice IV .....	6
RS THR 4973: Clinical Practice V .....	5
RS THR 4983: Clinical Practice VI.....	5
RS THR 4993: Clinical Practice VII.....	5

#### Professional Certification

After graduation, students are eligible to take the Entry Level and Registry Examinations given by the National Board for Respiratory Care.

## Sample Ten-Semester Program

### Bachelor of Health Science with a major in Diagnostic Medical Ultrasound

Check the *Undergraduate Catalog* for prerequisites.

#### Fall I

MATH 1100 OR 1120.....	3
PSYCH 1000 .....	3
CHEM 1100 .....	3
Humanities .....	3
<b>Total.....</b>	<b>12</b>

#### Fall II

PHYSICS 1210 .....	4
PTH & AS 2201 & 2203..	5
ESC PS 4170 .....	3
HTH PR 2190 .....	3
<b>Total.....</b>	<b>15</b>

#### Summer II

DMU 4200 .....	3
CP&D 4480.....	3
DMU 4312 .....	3
<b>Total.....</b>	<b>9</b>

#### Fall III

DMU 4313 .....	3
DMU 4315 .....	3
DMU 4309 .....	5
DMU 4325 .....	3
DMU 4311 .....	3
<b>Total.....</b>	<b>17</b>

#### Summer III

DMU 4993 .....	8
<b>Total.....</b>	<b>8</b>

#### Fall IV

DMU 4318 .....	3
DMU 4320 .....	3
DMU 4326 .....	6
DMU 4943 .....	6
<b>Total.....</b>	<b>15</b>

#### Winter I

BIO SC 1010 & 1020 OR 1500 .....	5
ENGLISH 1000 .....	3
COMMUN 1200 .....	3
SOCIOL 1000 .....	3
<b>Total.....</b>	<b>13</b>

#### Winter II

HIST 1100 OR 1200 OR POL SC 1100 OR 1700....	3
Amer Hist/Pol Sci .....	3
MPP 3202 .....	5
DMU 1000 .....	1
Humanities .....	3
<b>Total.....</b>	<b>15</b>

#### Winter III

DMU 4314 .....	5
DMU 4941 .....	7
DMU 4234 .....	3
DMU 4322 .....	3
<b>Total.....</b>	<b>18</b>

#### Winter IV

DMU 4330 .....	3
DMU 4332 .....	4
DMU 4944 .....	7
DMU 4388 .....	3
<b>Total.....</b>	<b>17</b>

\* Application for admission due February 1 of the Sophomore year.

## Sample Nine-Semester Program

### Bachelor of Health Science with a major in Clinical Laboratory Science with an emphasis in Medical Technology

Check the *Undergraduate Catalog* for prerequisites.

#### Fall I

HP 1000.....	1
MATH 1100/1120 .....	3
POL SC 1100 .....	3
PSYCH 1000.....	3
ENGLISH 1000.....	3
CHEM 1310.....	2
<b>Total.....</b>	<b>15</b>

#### Fall II

CHEM 1330.....	3
COMMUN 1200 .....	3
MPP 3202.....	5
BIO SC 2200.....	4
<b>Total.....</b>	<b>15</b>

#### Fall III

HTH PR 4300 .....	3
MICROB 4304.....	3
CHEM 2100.....	3
STAT 1200/1300 .....	3
Elective .....	3
<b>Total.....</b>	<b>15</b>

#### Summer III

(to be completed in Omaha)	
CL L S 4414 .....	1
CL L S 4416 .....	1
CL L S 4418 .....	1
CL L S 4420 .....	1
CL L S 4422 .....	1
CL L S 4426 .....	1
<b>Total.....</b>	<b>6</b>

#### Fall IV

CL L S 4412 .....	1
CL L S 4414 .....	3
CL L S 4416 .....	3
CL L S 4418 .....	3
CL L S 4422 .....	2
CL L S 4424 .....	1
CL L S 4970 .....	1
<b>Total.....</b>	<b>14</b>

#### Winter I

BIO SC 1500 .....	5
CHEM 1320.....	3
SOCIOL 1000 .....	3
ART 1020 (WI).....	3
<b>Total.....</b>	<b>14</b>

#### Winter II

MICROB 3200.....	4
Humanities Course.....	3
Elective .....	3
Elective .....	3
<b>Total.....</b>	<b>13</b>

#### Winter III

CHEM 3200.....	4
BIOCHEM 3630 .....	3
CHEM 3700 (WI) .....	3
BIO SC 2300.....	4
<b>Total.....</b>	<b>14</b>

#### Winter IV

CL L S 4412 .....	3
CL L S 4415 .....	3
CL L S 4417 .....	3
CL L S 4419 .....	3
CL L S 4423 .....	2
CL L S 4970.....	1
<b>Total.....</b>	<b>15</b>

# Sample Eight-Semester Program

## Bachelor of Health Science with a major in Radiologic Sciences with an emphasis in Nuclear Medicine

Check the *Undergraduate Catalog* for prerequisites.

### Fall I

CHEM 1310.....	2
MATH 1100.....	3
HIST 1100 OR 1200 OR POL SC 1100 OR 1700.....	3
PSYCH 1000.....	3
Humanities.....	3
<b>Total.....</b>	<b>14</b>

### Fall II

CHEM 1330.....	3
CHEM 2100 OR CHEM 3200.....	3-4
RA SCI 4303.....	3
RADIOL 4328.....	3
<b>Total.....</b>	<b>12-13</b>

### Fall III

MPP 3202.....	5
ESC PS 4170 OR STAT 1200 OR 1300.....	3
HTH PR 2190.....	3
NUCMED 4329.....	3
Humanities.....	3
<b>Total.....</b>	<b>17</b>

### Summer III

NUCMED 3256.....	2
CP&D 4460.....	3
NUCMED 4232.....	3
<b>Total.....</b>	<b>8</b>

### Fall IV

NUCMED 4299.....	3
NUCMED 4327.....	3
NUCMED 4940.....	6
CP&D 4955.....	2
<b>Total.....</b>	<b>14</b>

### Winter I

CHEM 1320.....	3
ENGLSH 1000.....	3
BIO SC 1010 & 1020 OR BIO SC 1500.....	5
MATH 1400.....	3
NUC MED 1000.....	1
<b>Total.....</b>	<b>15</b>

### Winter II

PHYSICS 1210.....	4
PTH&AS 2201/2203.....	5
CHEM 4600.....	3
SOCIOLOG 1000 OR ANTHRO 1000.....	3
<b>Total.....</b>	<b>15</b>

### Winter III

PHYSICS 1220.....	4
NUCMED 3263.....	3
CP&D 3460.....	3
CP&D 4480.....	3
<b>Total.....</b>	<b>13</b>

### Winter IV

NUCMED 4269.....	2
NUCMED 4330.....	3
NUCMED 4941.....	7
NUCMED 4971.....	2
<b>Total.....</b>	<b>14</b>

## Bachelor of Health Sciences with a major in Radiologic Sciences with an emphasis in Radiography

Check the *Undergraduate Catalog* for prerequisites.

### Fall I

HTH PR 1000.....	1
MATH 1120.....	3
SOCIOLOG 1000 OR RU SOC 1100.....	3
BIO SC 1010 & 1020 OR BIO SC 1500.....	5
<b>Total.....</b>	<b>12</b>

### Fall II

CHEM 1320.....	3
COMMUN 1200.....	3
PTH&AS 2201/2203.....	5
Humanities.....	3
<b>Total.....</b>	<b>14</b>

### Summer II

RA SCI 3120.....	3
RA SCI 3130.....	2
RA SCI 3110.....	2
<b>Total.....</b>	<b>7</b>

### Fall III

RA SCI 3140.....	3
RA SCI 3180.....	2
RA SCI 3160.....	3
RA SCI 3941.....	3
RA SCI 3150*.....	3
<b>Total.....</b>	<b>14</b>

### Summer III

RA SCI 4943.....	3
CP&D 4460.....	3
<b>Total.....</b>	<b>6</b>

### Fall IV

RADIOL 4328.....	3
RA SCI 4944.....	3
CP&D 4955.....	2
RA SCI 4303.....	3
CP&D 4440.....	3
<b>Total.....</b>	<b>14</b>

### Winter I

PSYCH 1000.....	3
CHEM 1310.....	2
ENGLSH 1000.....	3
PHYSICS 1210.....	4
HIST 1100 or 1200 OR POL SC 1100 or 1700....	3
<b>Total.....</b>	<b>15</b>

### Winter II

MP 3202.....	5
CS 1020 OR C&I 1210 & 4550.....	3
HLTH PR 2190.....	3
Humanities.....	3
<b>Total.....</b>	<b>14</b>

### Winter III

RA SCI 3170.....	2
RA SCI 3190.....	3
RA SCI 3942.....	3
CP&D 3460.....	3
RA SCI 4110.....	3
<b>Total.....</b>	<b>14</b>

### Winter IV

RA SCI 4947.....	3
RA SCI 4945.....	3
RA SCI 4980.....	3
RA SCI 4140 OR 4150+.	5
<b>Total.....</b>	<b>14</b>

Application for admission due February 1 of the sophomore year.

\*Application for admission due February 1 of the sophomore year.

+ Course is only taught one semester per year.

# Sample Eight-Semester Program (Cont.)

## Bachelor of Health Sciences with a major in Respiratory Therapy

Check the *Undergraduate Catalog* for prerequisites.

### Fall I

FALL PR/PS THR 1000.	1
MATH 1120 .....	3
PSYCH 1000.....	3
HIST 1100 or 1200 OR	
POL SC 1100 or 1700 ....	3
CHEM 1310.....	2
Humanities .....	3
<b>Total.....</b>	<b>15</b>

### Winter I

BIO SC 1010 & 1020 OR	
BIO SC 1500.....	5
CHEM 1320.....	3
ENGLSH 1000.....	3
SOCIOL 1000+ OR	
RU SOC 1100 .....	3
<b>Total.....</b>	<b>14</b>

### Fall II

PHYSICS 1210 .....	4
PTH&AS 2201/2203.....	5
ESC PS 4170.....	3
Humanities .....	3
<b>Total.....</b>	<b>15</b>

### Winter II

MP 3202.....	5
MICROB 3200.....	4
HTH PR 2190 .....	3
CP&D 4480.....	3
<b>Total.....</b>	<b>15</b>

### Fall III

HTH PR 3200 .....	2
RS THR 3220.....	5
RS THR 3941.....	2
RS THR 3280.....	1
RS THR 4040.....	5
<b>Total.....</b>	<b>15</b>

### Winter III

RS THR 3420.....	3
RS THR 3942.....	4
RS THR 3440.....	3
CP&D 3460.....	3
RS THR 3480.....	1
RS THR 4020.....	3
CP&D 3460.....	3
<b>Total.....</b>	<b>17</b>

### Summer III

RS THR 3943.....	2
RS THR 4220.....	1
RS THR 4240.....	3
CP&OD 4460.....	3
<b>Total.....</b>	<b>9</b>

### Fall IV

RS THR 4940.....	6
CP&D 4440.....	3
CP&D 4955.....	2
RS THR 4420.....	3
<b>Total.....</b>	<b>14</b>

### Winter IV

RS THR 4973.....	5
RS THR 4983.....	5
RS THR 4993.....	5
RS THR 4920.....	1-3
RS THR 4085.....	var
RS THR 4460.....	3
<b>Total.....</b>	<b>16-21</b>

Application for admission due February 1 of the sophomore year.

## CARDIOPULMONARY AND DIAGNOSTIC SCIENCES COURSES

**CP&D 2190—Medical Terminology (3).** Medical terminology based on a word building system. This course is intended for students majoring in health professions, nursing and other helping professions, pre-med and biology. Prerequisite: sophomore standing.

**CP&D 3460—Cardiovascular and Pulmonary Diagnostic Applications I (3).** (same as Radiologic Sciences 3460 and Respiratory Therapy 3460). Problem-based study of cardiopulmonary anatomy and physiology using current imaging methods. Emphasis given to assessment of the acutely distressed cardiac or pulmonary subject, emergency pulmonary support and vascular access techniques.

**CP&D 4440—Organization and Administration (3).** (same as Radiologic Science 4440 and Respiratory Therapy 4440). Examines design and operation of allied health service departments and educational programs, including facilities, personnel procedures, record systems, ethics, medical-legal aspects, interdepartmental relations and curriculum development.

**CP&D 4460—Cardiovascular and Pulmonary Diagnostic Applications II (3).** (same as Radiologic Sciences 4460 and Respiratory Therapy 4460). Advanced study of Cardiac dysrhythmias, hypertrophy, and infarction, emphasizing aspects of treatment employed during Advanced Cardiac Life Support. Prerequisite: CP&D 3460.

**CP&D 4480—Clinical Ethics (3).** Analysis of clinical situations per ethical principles and decision-making models. Examination of fundamental doctrines and principles for legal and ethical clinical practice and policy. Prerequisites: junior standing or instructor's consent. Restricted to SHP pre-professional and professional students only.

**CP&D 4955—Introduction to Research (2).** (same as Respiratory Therapy 4955). An interdisciplinary course designed to promote undergraduate allied health research. Includes identifying and designing research problems through formulating relevant questions, learning to systematically search for answers, and methods for searching the literature.

## DIAGNOSTIC MEDICAL ULTRASOUND COURSES

**DMU 1000—Introduction to Diagnostic Medical Ultrasound (1).** Introduction to the profession of diagnostic medical ultrasound. Imaging characteristics, educational requirements, professional trends. Observation opportunities. Graded on S/U basis only.

**DMU 4001—Topics in Diagnostic Medical Ultrasound(cr.arr.)** Organized study of selected topics in medical ultrasound. Topics may vary. Graded on A/F basis only. May be repeated for credit. Prerequisites: restricted to DMU undergraduate students; program director's consent.

**DMU 4085—Problems in Diagnostic Medical Ultrasound(cr.arr.)** Independent study leading to a special project or paper. Graded on A/F basis only. May be repeated for credit. Prerequisites: restricted to DMU undergraduate students only; program director's consent.

**DMU 4200—Principles of Diagnostic Medical Ultrasound (3).** Principles and history of ultrasound, ultrasound equipment, sonographic techniques, aspects of patient care. Prerequisites: departmental consent.

**DMU 4234—Clinical Pathophysiology (3).** Abnormal function of organ systems in the presence of disease; clinical manifestations and medical management.

**DMU 4309—Normal Ultrasound Clinical (5).** Integration of ultrasound instrumentation and clinical practice in a laboratory setting. Interaction between the sonographer, equipment and patient. Prerequisites: DMU 4312, 4313 and 4315; instructor's consent.

**DMU 4311—Pathological Images Ultrasound (3).** Disease presentation in ultrasound imaging. Practical aspects of ultrasound scanning techniques in pathology. Prerequisites: DMU 4200, 4312 and 4315; instructor's consent.

**DMU 4312—Sectional Anatomy (3).** (same as Radiological Science 4110). A study of human anatomy using the sectional approach; anatomical structures will be related to modern medical imaging techniques. Prerequisite: instructor's consent.

**DMU 4313—Ultrasound Physics (3).** Principles of diagnostic ultrasound physics. Sound wave characteristics, tissue interaction, power intensity, and Doppler physics. Prerequisites: MATH 1100, CHEM 1100 or 1320, PHYSICS 1210, and departmental consent.

**DMU 4314—Abdominal Ultrasound (5).** Differentiation between normal and pathological ultrasound studies of the abdomen. Differential diagnosis of pathological states. Prerequisites: DMU 4312, 4309 and 4311; instructor's consent.

**DMU 4315—Ultrasound Instrumentation (3).** Integration of ultrasound physics and instrumentation components in a laboratory setting. Practice in modes of operation and safety. Prerequisite: DMU 4200; instructor's consent.

**DMU 4318—Gynecology Ultrasound (3).** Study of normal and abnormal gynecological ultrasound anatomy. Distinction between normal and pathological states and ultrasound differential diagnosis. Prerequisites: DMU 4312, 4309 and 4311.

**DMU 4320—Obstetrics Ultrasound (3).** Study of normal and abnormal obstetrical ultrasound anatomy. Distinction between normal and pathological OB ultrasound studies with emphasis on differential diagnosis. Prerequisites: DMU 4312, 4309 and 4311; instructor's consent.

**DMU 4322—Superficial Organs Ultrasound (3).** Ultrasound evaluation and diagnosis of normal and abnormal superficial organs; thyroid gland, testes, breasts, soft tissues and musculoskeletal. Prerequisites: DMU 4312, 4309 and 4311; instructor's consent.

**DMU 4325—Ultrasound Clinical Pharmacology and Contrast Agents (3).** Study of the biophysical, biochemical and complete action of ultrasound contrast agents and other drugs used in DMU and their pharmacodynamics.

**DMU 4326—Vascular Ultrasound Physics, Instrumentation and Hemodynamics (3).**

Study of vascular principles and fundamentals including physics and instrumentation. Emphasis on ultrasound wave characteristics, Doppler principles, tissue interaction and hemodynamics. Prerequisites: DMU 4313 and 4315; instructor's consent.

**DMU 4330—Vascular Ultrasound Lab (3).** Vascular ultrasound scanning techniques, protocols, measurements, film/video critique, and Plethysmography in a clinical lab setting. Prerequisite: DMU 4312, and 4326; instructor's consent.

**DMU 4332—Vascular Ultrasound (4).** Vascular ultrasound for normal and pathological processes: study of disease, correlation of patients' clinical data and ultrasound findings used in differential diagnosis. Prerequisites: DMU 4312, 4311, 4322, and 4326 or instructor's consent.

**DMU 4338—Cardiac Ultrasound Physics, Instrumentation and Hemodynamics (3).** Study of principles and fundamentals of cardiac ultrasound including physics and instrumentation: ultrasound wave characteristics, M-mode, Doppler principles and cardiac hemodynamics. Prerequisites: DMU 4313 and 4315 and instructor's consent.

**DMU 4941—Ultrasound Clinical I (7).** Application of medical ultrasound in supervised clinical settings. Decisions regarding diagnosis, patient handling and imaging. Prerequisites: DMU 4312, 4309 and 4311 and instructor's consent.

**DMU 4943—Ultrasound Clinical III (6).** Final clinical application of general medical ultrasound practicum in supervised clinical settings. Further enhancement of practice, decision making, patient handling, image processing and case studies. Prerequisite: DMU 4993 and instructor's consent.

**DMU 4944—Vascular Ultrasound Clinical IV (7).** Application of diagnostic vascular ultrasound in supervised clinical settings: practice, decision making, patient handling and image processing. Prerequisite: DMU 4326 and instructor's consent.

**DMU 4993—Ultrasound Clinical II (8).** Application of medical ultrasound in supervised clinical settings with practice and decision making related to ultrasound diagnosis, patient handling and image processing. Prerequisite: DMU 4941; instructor's consent.

## NUCLEAR MEDICINE COURSES

**NUCMED 1000—Orientation to Nuclear Medicine (1).** An overview using a series of short rotations through local nuclear medicine departments and a self-directed review of a current text. Clinical rotations for this course are arranged on an individual basis. Graded on S/U basis only.

**NUCMED 3256—Clinical Nuclear Medicine I (2).** Introductory clinical course for senior level students. Introduces instrumentation, administration, procedures, and laboratory techniques. Includes supervised clinical participation. Prerequisite: NUCMED 3263.

**NUCMED 3263—Morphological Correlations in Nuclear Medicine I (3).** Anatomy, physiology, and pathology of the human body as assessed using medicine techniques. The

first of two courses that address current clinical applications of nuclear medicine. Prerequisite: NU ENG 4303.

**NUCMED 3328—Introductory Radiation Biology (3).** (same as Biological Sciences 4328, Nuclear Engineering 4328, Veterinary Medicine & Surgery 7328). Concepts of ionizing radiations, their actions on matter through effects on simple chemical systems, biological molecules, cell, organisms, man. Prerequisite: junior standing Sciences/Engineering; one course in Biological Sciences & Physics/Chemistry; or instructor's consent.

**NUCMED 4085—Problems in Nuclear Medicine (1-3).** Supervised investigation in an aspect of nuclear medicine technology, usually culminating in a written report.

**NUCMED 4232—Clinical In Vitro (6).** Practical experience in the clinical setting with radioassay procedures performed in nuclear medicine. Includes lectures describing clinical applications.

**NUCMED 4268—Clinical Nuclear Medicine II (2).** Continuation of clinical series taught in conjunction with Nuclear Medicine 3256 and 4232. Addresses advanced therapeutic and diagnostic procedures, computer applications, and quality assurance procedures. Prerequisite: NUCMED 3256.

**NUCMED 4269—Clinical Nuclear Medicine III (2).** Final course in clinical series. Seminar discussion of the areas of professional ethics, current medical-legal considerations, and future nuclear medicine applications. Prerequisite: NUCMED 3256.

**NUCMED 4299—Morphological Correlations in Nuclear Medicine II (3).** Anatomy, physiology, and pathology of the human body as assessed using nuclear medicine techniques. The second of two courses that address current clinical applications of nuclear medicine. Prerequisite: NUCMED 3263.

**NUCMED 4327—Nuclear Medicine Instrumentation (3).** Radionuclide imaging systems and the use of computers. Topics include Anger camera systems, emission tomography, ultrasound, nuclear magnetic resonance, and bone absorptionmetry. Prerequisites: PHYSCS 1220 and MATH 1400.

**NUCMED 4329—Radiopharmaceuticals in Nuclear Medicine (3).** Introduces concepts of radiopharmacy, generator systems, labeling of materials, quality control procedures and FDA regulations concerning radiopharmaceuticals. Prerequisites: CHEM 1320 and instructor's consent.

**NUCMED 4330—PET in Nuclear Medicine (3).** Overview of special isotope production techniques for positron emitting agents; instrumentation concerns beyond standard Anger imaging; and image critique and analysis with morphologic correlation. Graded on A/F basis only. Prerequisite: PHYSCS 1210 and NUCMED 4327 or instructor's consent. May be repeated for credit.

**NUCMED 4940—Clinical In Vivo I (6).** Practical experience in the clinical setting with imaging procedures performed in nuclear medicine.

**NUCMED 4941—Clinical In Vivo II (7).** Practical experience in clinical setting with advanced imaging techniques and instrument

quality control. Prerequisite: NUCMED 4940. Restricted to undergraduate students.

## RADIOLOGICAL SCIENCES COURSES

**RASCI 1000—Introduction to Radiography (1).** Overview of radiography through small group discussions and onsite visitations in radiology departments. Graded on S/U basis only.

**RA SCI 3110—Radiographic Positioning I (2).** Instruction in radiographic positioning of the chest, upper extremity, shoulder girdle, and lower extremity.

**RA SCI 3120—Fundamentals of Radiography (3).** Orientation to radiology department, ethics, basic nursing procedures, medical legal considerations and radiation safety procedures.

**RA SCI 3130—Basic Radiographic Skills (2).** An introduction to radiographic processing techniques, intensifying screens, sensitometry and silver reclamation procedures.

**RA SCI 3140—Principles of Radiographic Exposure I (3).** Theory and principles of X-ray technique; correlation of factors with application.

**RA SCI 3150—Radiologic Pharmacology (3).** Introductory study of drugs commonly used in medical imaging with emphasis on pharmacokinetics and pharmacodynamics. Designed for allied health students and personnel in the medical imaging sciences.

**RA SCI 3160—Radiologic Physics (3).** Fundamentals of physics of electricity and radiant energy; principles of generation of electromagnetic radiations and applicable equipment.

**RA SCI 3170—Imaging Modalities (2).** A presentation of various recording media emphasizes fluoroscopy, image intensification, computed tomography, digital, xeroradiography, thermography, ultrasound, magnetic resonance imaging; automatic exposure devices; and a brief introduction to nuclear medicine and radiation therapy.

**RA SCI 3180—Radiographic Positioning II (2).** Instruction in radiographic positioning of the pelvic girdle, vertebral column, bony thorax, cranium, gastrointestinal system, and urinary system.

**RASCI 3190—Radiographic Positioning III (3).** Advanced positioning techniques; emphasizes trauma radiography, vascular studies, mammography, and other procedures.

**RA SCI 3460—Cardiovascular and Pulmonary Diagnostic Applications I (3).** (same as Respiratory Therapy 3460). Problem-based study of cardiopulmonary anatomy and physiology using current imaging methods. Emphasis given to assessment of the acutely distressed cardiac or pulmonary subject, emergency pulmonary support and vascular access techniques.

**RA SCI 3941—Clinical Education I (3).** Supervised clinical rotations in basic areas of radiography. Must complete: mandatory exams from one category competency; two elective exams; and must be competency-tested in chest and abdomen.

**RA SCI 3942—Clinical Education II (3).**

Supervised clinical rotations in basic areas of radiography and in special procedures. Must complete: mandatory exams from one category competency; one neurological exam; three elective exams; two exams from miscellaneous category; and three periodical exams.

**RASCI 4085—Problems in Medical Imaging (1-3).** Supervise investigation in an aspect of medical imaging science usually culminating in a written report. Prerequisite: instructor's consent.

**RASCI 4110—Sectional Anatomy (3).** (same as Diagnostic Medical Ultrasound 4312/7312). A study of human anatomy using the sectional approach; anatomical structures will be related to modern medical imaging techniques. Prerequisite: instructor's consent.

**RA SCI 4140—Magnetic Resonance Imaging: Physics and Procedures (5).** Magnetic Resonance imaging fundamentals, applications, instrumentation, physical principles. Basic imaging concepts including positioning, scanning protocols, contrast imaging, anatomy review, and pathological considerations.

**RA SCI 4150—Computed Tomography: Physics and Procedures (5).** Computed tomography imaging fundamentals, applications, instrumentation, physical principles. Applied concepts regarding patient care and CT imaging procedures.

**RASCI 4303—Radiation Safety (3).** (same as Nuclear Science and Engineering 4303/7303) Types and origins of radiation; radiation detection and measurement; radiation interactions; shielding; dose calculations; federal, state and local regulations; and procedures for safe uses of radiation. Laboratory experiments in radiation measurements and protection.

**RA SCI 4440—Organization and Administration (3).** (same as Respiratory Therapy 4440). Examines design and operation of allied health service departments and educational programs, including facilities, personnel procedures, record systems, ethics, medical-legal aspects, interdepartmental relations and curriculum development.

**RA SCI 4943—Clinical Education III (3).** Progression from basic to more advanced rotations. Must complete: mandatory exams from one category competency; one neurological exam; three elective exams; three exams from miscellaneous category; and three periodical exams.

**RA SCI 4944—Clinical Education IV (3).** Advanced clinical rotations. Experience with Equipment Quality Control. Must complete: mandatory exams from one category; one neurological exam; three elective exams; three exams from miscellaneous category; and three periodical exams.

**RASCI 4945—Clinical Education V (3).** Advanced clinical rotation at one of three clinical centers to include an evening and a night rotation; must complete final competency.

**RA SCI 4946—Advanced Medical Imaging Externship (1-3).** Supervised clinical experience in a medical imaging speciality with emphasis on patient care and technical practice. Prerequisite: instructor's consent.

**RASCI 4947—Radiography Overview (3).** A comprehensive overview of all aspects of diag-

nostic radiology with emphasis on procedures, technique, radiation protection, positioning, radiographic anatomy and patient care.

**RA SCI 4980—Imaging Pathology (3).** Etiology and processes of disease. Emphasis on pathology of body systems and the manifestation of pathology through imaging.

## RESPIRATORY THERAPY COURSES

**RS THR 1000—Introduction to Respiratory Therapy (1).** Introductory course to assist students acquiring information about the respiratory therapy profession. Students observe therapists in hospitals and participate in lectures on credentialing, program requirements, placement and future trends in the profession. Graded on S/U basis only.

**RS THR 3000—Normal Respiratory Function (3).** Mechanics, control, blood gas transport, work of breathing, and respiratory therapy aspects of acid-base balance.

**RS THR 3010—Cardiopulmonary Pathology (2).** An introductory course into the study of disease, specifically emphasizing the relationship between structure and function of the diseased lung and related organ systems.

**RS THR 3220—Equipment and Techniques (5).** History, development and organization of respiratory therapy. Manufacture, supply, storage and piping of gases; pressure regulation, flow control, humidification. Cleaning, sterilizing, maintenance, safety. Equipment for pressure breathing, oxygen, aerosol therapy.

**RS THR 3280—Cardiopulmonary Pharmacology I (1).** General principles of cardiopulmonary drug dosage, absorption, action and excretion. Specific attention to autonomic nervous system, sympathomimetics, parasympatholytics, methylxanthines, glucocorticoid, anti-allergic and mucokinetic therapy.

**RS THR 3420—Principles of Mechanical Ventilation (3).** Continuation of Respiratory Therapy 3220. Course covers the functional aspects of natural and artificial ventilation; examines representative classes and types of mechanical ventilators; physiologic monitoring devices, pulmonary function testing.

**RS THR 3440—Advanced Skills and Diagnostic Testing Lab (3).** Operation and implementation of pulmonary function testing, invasive pulmonary devices, mechanical ventilation, and neonatal resuscitation. Prerequisites: RS THR 3220, 3941, 4040. Graded on A/F basis only.

**RS THR 3480—Cardiopulmonary Pharmacology II (1).** General principles of cardiopulmonary drug dosage, absorption, action and excretion. Specific attention to neuromuscular blocking agents, central nervous system depressants and stimulants, cardiovascular agents, diuretics, aerosolized antivirals and antibiotics, and select respiratory disease agents.

**RS THR 3941—Clinical Practice I (2).** To be taken concurrently with RS THR 3220 for which it serves as an extension of the laboratory time and an opportunity for structured clinical experience exposures.

**RS THR 3942—Clinical Practice II (4).** To be taken concurrently with Respiratory Therapy 3420, for which it serves as an extension of the

laboratory time, and an opportunity for structured clinical experience exposures.

**RS THR 3943—Clinical Practice III (2).** Continuation of supervised clinical experience from RS THR 3942. Graded on A/F basis only.

**RS THR 4020—Perinatal/Neonatal Respiratory Care (3).** Evaluation and management of perinatal/neonatal pulmonary, medical and surgical conditions which require respiratory care. Emphasis on resuscitation, pathophysiology, evaluation, blood gas and x-ray interpretation, treatment and mechanical ventilation.

**RS THR 4040—Respiratory Pathophysiology (5).** Clinical pulmonary disease, organized around the gross structural components of the lung, airways, alveoli and pulmonary vasculature. Impact of disease on normal structure function; clinical, roentgenographic, and physiologic manifestations are described.

**RS THR 4085—Problems in Respiratory Therapy (cr.arr.)** Independent work on special problems related to cardiopulmonary health. Course not offered for graduate credit. Graded on A/F basis only. Prerequisite: instructor's consent.

**RS THR 4220—Community and Patient Education I (1).** Design and implement materials for educational presentations for a given patient population. Prerequisites: RS THR 3943 or instructor's consent. Graded on A/F basis only.

**RS THR 4240—Pulmonary Rehabilitation (3).** Focus is on an interdisciplinary approach to pulmonary rehabilitation and home care of the adult cardiopulmonary patient. Prerequisite: senior Respiratory Therapy standing or instructor's consent. Graded on A/F basis only.

**RS THR 4420—Pediatric Respiratory Care (3).** Evaluation and management of pulmonary, medical and surgical pediatric conditions which require respiratory care. Emphasis will be on pediatric resuscitation, pathophysiology, blood gas and x-ray interpretation, treatment, mechanical ventilation and home health care.

**RS THR 4440—Organization and Administration (3).** (same as Radiological Science 4440). Examines design and operation of allied health service departments and educational programs, including facilities, personnel procedures, record systems, ethics, medical-legal aspects, interdepartmental relations and curriculum development.

**RS THR 4460—Clinical Respiratory Therapy I (3).** Rounds, case studies and extended clinical practice. Specific applications of respiratory therapy in emergency medicine, surgery, obstetrics, pediatrics, etc.

**RS THR 4640—Teaching Practicum (3).** Structured and supervised experience identifying student characteristics, methods for teaching, improving assessment, current development and instructional design.

**RS THR 4660—Clinical Respiratory Therapy II (3).** Continuation of Respiratory Therapy 4460. Clinical rounds, case presentations and advanced study.

**RS THR 4920—Community and Patient Education II (1-3).** Presentations to a variety of community groups. Emphasis on wellness and disease prevention. Prerequisites: RS THR 4220 or instructor's consent. Graded on S/U basis only.

**RS THR 4940—Clinical Practice IV (6).** Structured and supervised clinical experience. Prerequisites: RS THR 3420, 3942, 3440, 3943, 4020. Graded on S/U basis only.

**RS THR 4956—Research in Respiratory Therapy (2-6).** Selected research projects guided by a senior staff member. Prerequisite: CP&D 4955.

**RS THR 4973—Clinical Practice V (5).** An extension of the supervised practicum begun in Respiratory Therapy 4940. Emphasis in adult critical care and special procedures including bronchoscopies, cardiac catheterization and chest tube placement.

**RS THR 4983—Clinical Practice VI (5).** An extension of the supervised practicum begun in Respiratory Therapy 4940. Emphasis in perinatal and pediatric critical care including pediatric pulmonary function testing and airway management.

**RS THR 4993—Clinical Practice VII (5).** An extension of the supervised practicum begun in Respiratory Therapy 4940. Emphasis in rehabilitation and home care, inservice education, and management. Students will participate in on-going research projects and community service activities.

# Department of Communication Science and Disorders

P. S. Dale, Chair  
School of Health Professions  
303 Lewis Hall  
(573) 882-3873  
mucsd@health.missouri.edu

## Advising Contact

Jill S. Diener  
(573) 884-2329

## FACULTY

**PROFESSOR** P. S. Dale  
**ASSOCIATE PROFESSOR** J. C. Goodman  
**ASSISTANT PROFESSOR** N. Radhakrishnan, B. Slansky,  
S. A. Wagovich  
**CLINICAL ASSOCIATE PROFESSOR** B. L. Brinkman,  
J. L. Deal, B. McLay  
**CLINICAL ASSISTANT PROFESSOR** L. Riley  
**RESEARCH ASSISTANT PROFESSOR** L. S. Day  
**CLINICAL INSTRUCTOR** D. R. Fritz, M. A. Scheneman,  
P. M. Slansky

Communication Science and Disorders includes the study of normal language, speech and hearing across the life span, as well as communication disorders that result from biological, environmental and behavioral factors. Communication Science and Disorders includes the professions of speech-language pathology and audiology.

Speech-language pathologists evaluate the speech and language of children and adults to determine whether problems exist in such areas as voice, articulation, fluency and receptive or expressive language. They also plan and carry out programs for the treatment of these problems. Audiologists evaluate hearing, identify hearing loss and participate in the rehabilitation of persons with hearing impairments.

The professions of speech-language pathology and audiology require master's or doctoral degrees. Acceptance to an undergraduate program does not guarantee acceptance to a graduate program. Refer to the *Graduate Catalog* for information about the MHS and PhD degrees.

## Major Program Requirements – Communication Science and Disorders (BHS)

Students are required to apply to the Communication Science and Disorders major. Applications into the BHS program are considered once a year, and they must be submitted by February 15 of the student's sophomore year. Applicants must have completed at least 45 hours of college credit before applying,

and students who are admitted must have completed 60 hours of college credit before beginning coursework as Communication Science and Disorders majors. A minimum GPA of 2.75 on a four-point scale and a composite score of 22 or above on the ACT are required for acceptance into the BHS program. Meeting the minimum criteria and declaring a major of pre-Communication Science and Disorders do not guarantee acceptance into the program.

In addition to University, college and degree requirements, including University general education, students must complete the following:

## Major core requirements..... 38-40

ENGLSH 1000: Exposition and Argumentation .....	3
COMMUN 1200: Introduction to Speech Communication .....	3
PSYCH 1000: General Psychology.....	3
PSYCH 2410: Child Psychology .....	3
MATH 1120: College Algebra OR	
MATH 1160: Precalculus Mathematics .....	3
STAT 1200: Introductory Statistical Reasoning .....	3
STAT 1300: Elementary Statistics.....	3
ESC PS 4170: Introduction to Educational Statistics.....	3
ENGLSH/LINGST 4600: Structure of American English....	3
<b>SOCIAL SCIENCES REQUIREMENT</b>	
HIST 1100: Survey of American History to 1865 OR	
HIST 1200: Survey of American History Since 1865 OR	
POL SC 1100: American Government .....	3
<b>BIOLOGICAL SCIENCE REQUIREMENT</b>	
(BIO SC 1010: General Principles and Concepts of	
Biology and BIO SC 1020: General Biology Laboratory	
OR BIO SC 1500: Introduction to Biological Systems	
with Laboratory).....	5
<b>PHYSICAL SCIENCES REQUIREMENT</b>	
(PHYSCS 1150: Concepts of Physics OR	
PHYSCS 1210: College Physics OR	
CHEM 1100: Atoms and Molecules with Lab OR	
CHEM 1310: General Chemistry I) .....	3-5
One Biology, Chemistry or Physics lab required.	
HUMANITIES ELECTIVES.....	6
<b>Communication science and disorders courses .....</b>	<b>43</b>
C S&D 1060: Human Language .....	3
C S&D 2120: Survey of Communication Disorders .....	3
C S&D 3010: American Phonetics .....	3
C S&D 3020: Normal Language Development .....	3
C S&D 3210: Anatomy & Physiology of the Speech	
Mechanism .....	3
C S&D 3230: Hearing Science .....	3
C S&D 4430: Neurophysiology for Speech, Language and	
Hearing .....	3
C S&D 4020: Language Disorders in Children .....	3
C S&D 4030: Language Disorders of Adults.....	2
C S&D 4320: Disorders of Phonology and Articulation .....	3
C S&D 4210: Fluency Disorders .....	2
C S&D 4220: Voice Disorders .....	1
C S&D 4900: Clinical Observation in Communication	
Disorders (1 + 1) .....	2
(one credit is taken fall and winter of senior year)	
C S&D 4330: Introduction to Audiology .....	3
C S&D 4420: Reading & Language Disabilities in School	
Age Children .....	3
C S&D 4500: Issues in Professional Practice .....	3

# Sample Eight-Semester Programs

## Bachelor of Health Science Degree with a major in Communication Science & Disorders

### Fall I

HTH PR 1000 .....	1
C S&D 1000 .....	1
Biological Science Requirement .....	5
PSYCH 1000.....	3
Humanities Elective .....	3
Elective .....	2
<b>Total.....</b>	<b>15</b>

### Fall II

C S&D 1060.....	3
C S&D 1110.....	3
PSYCH 2410.....	3
Electives .....	6
<b>Total.....</b>	<b>15</b>

### Winter I

HIST or POL SC .....	3
Physical Science Requirement .....	3
ENGLISH 1000 .....	3
MATH 1120 .....	3
COMMUN 1200 .....	3
<b>Total.....</b>	<b>15</b>

### Winter II

C S&D 2120 .....	3
Humanities elective .....	3
STAT 1200 or 1300.....	3
Electives .....	6
<b>Total.....</b>	<b>15</b>

### Fall III

C S&D 3210 .....	3
C S&D 4430.....	3
LINGST 4600 .....	3
Electives .....	6
<b>Total.....</b>	<b>15</b>

### Fall IV

C S&D 4020 .....	3
C S&D 4220 .....	1
C S&D 4320 .....	3
C S&D 4330 .....	3
C S&D 4900 .....	1
Clinical Elective.....	3
Electives .....	1
<b>Total.....</b>	<b>15</b>

### Winter III

C S&D 3010 .....	3
C S&D 3020.....	3
C S&D 3230 .....	3
Electives .....	6
<b>Total.....</b>	<b>15</b>

### Winter IV

C S&D 4030.....	2
C S&D 4210.....	2
C S&D 4420.....	3
C S&D 4500.....	3
C S&D 4900.....	1
Research Elective.....	3
Electives .....	1
<b>Total.....</b>	<b>15</b>

### COMMUNICATION SCIENCE AND DISORDER COURSES

**C S&D 1000—Introduction to Communication Science and Disorders (1).** Nature of communication and its development; types of speech, language and hearing disorders; professional preparation, settings, and work of speech-language pathologists and audiologists.

**C S&D 1010—Hearing and Deafness (3).** Anatomy and physiology of the ear, types and causes of hearing loss, methods of rehabilitation; psychology of deafness, history of deaf education and the culture of deaf persons. C S&D majors may not take for credit.

**C S&D 1060—Human Language (3).** (same as Anthropology 1060, Linguistics 1060 and English 1060). General introduction to various aspects of linguistic study. Elementary analysis of language data with some attention to application of linguistic study to other disciplines.

**C S&D 1110—Manual Communication I (3).** Introduction to the English-based sign system, Signed English, a system that has been developed to bridge the gap between English and American Sign Language. Offered on a S/U basis only.

**C S&D 1120—Manual Communication II (3).** Continued vocabulary development and introduction of American Sign Language syntax and morphology. Prerequisites: C S&D 1110 or instructor's consent.

**C S&D 2120—Survey of Communication Disorders (3).** Systematic survey of the disorders of speech, language and hearing.

**C S&D 3010—American Phonetics (3).** (Same as Linguistics 3010). Analysis of production and acoustics of the sounds of speech with an emphasis on American English; practice

in broad and narrow transcription using the International Phonetic Alphabet.

**C S&D 3020—Normal Language Development (3).** (same as Psychology 3810). Language development in children and changes in language processing during normal aging. Cognition and language; language learning processes; language sample analysis; relationship between spoken and written language. Prerequisites: LINGST 4600 or Child Psych.

**C S&D 3210—Anatomy and Physiology of the Speech Mechanism (3).** (same as Linguistics 3210). Introduction to anatomical and functional aspects of the speech mechanism.

**C S&D 3230—Hearing Science (3).** Introduction to the nature of sound and its measurement; anatomy and physiology of the auditory and vestibular systems; psychoacoustic methods and phenomena.

**C S&D 4001—Topics in Communication Science and Disorders (cr.arr.)** Organized study of selected topics. Subjects and earnable credit may vary from semester to semester. May be repeated with program consent. Prerequisites: junior standing and instructor's consent.

**C S&D 4020—Language Disorders in Children (3).** Overview of language disorders from early childhood through adolescence. Includes language disorders as primary disability and as secondary to other disabilities. Introduction to assessment and intervention. Prerequisites: C S&D 2120, 3020, LINGST 4600. C S&D majors only.

**C S&D 4030—Language Disorders of Adults (2).** Introduction to acquired adult language disorders. Review of neuroanatomy/physiology, etiology and symptomatology, with introduction to assessment and treatment procedures.

Prerequisites: C S&D 2120, C S&D 3020, C S&D 4430, and LINGST 4600 or consent of instructor.

**C S&D 4210—Fluency Disorders (2).** Introduction to the nature, assessment, and treatment of fluency disorders. Emphasis on developmental stuttering. Prerequisite: C S&D 2120, 3210.

**C S&D 4220—Voice Disorders (1).** Introduction to voice disorders in children and adults. Includes overview of perceptual and instrumental assessment procedures and selected treatment approaches. Prerequisites: C S&D 2120, 3010, 3210, 4430.

**C S&D 4320—Disorders of Phonology and Articulation (3).** Overview of disorders of use and production of speech sounds with an emphasis on developmental disorders. Introduction to assessment and treatment. Prerequisites: C S&D 2120, 3010, 3020, 3210. C S&D majors only.

**C S&D 4330—Introduction to Audiology (3).** Principles and techniques of audiological testing; etiologies of hearing impairment; current technologies in rehabilitation. Prerequisites: C S&D 3230 or instructor's consent.

**C S&D 4340—Aural Rehabilitation (3).** Identification, evaluation, and management of problems associated with hearing impairment in both children and adults. Includes issues related to speech/language development, communication, education, and social factors. Prerequisites: C S&D 3230 and 4330.

**C S&D 4420—Reading and Language Disabilities in School-Age Children (3).** Theories, research, and practice in reading development and disorders. Focus on reading disabilities related to language disorders of various etiologies

including developmental language disorders and head injury. Assessment, remediation, teaching methods.

**C S&D 4430—Neurophysiology for Speech, Language, and Hearing (3).** Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.

**C S&D 4500—Issues in Professional Practice (3).** Organizational, interprofessional, economic, legal, and ethical aspects of delivering speech, language, and hearing services.

**C S&D 4810—Psycholinguistics (3).** (same as Linguistics 4810). Examination of the knowledge and processes that underlie the human ability to produce and understand language. Prerequisite: instructor's consent.

**C S&D 4820—Speech Perception (3).** (same as Linguistics 4820). Selected topics in the perceptual processing of speech sounds and spoken language. Prerequisite: instructor's consent.

**C S&D 4830—Individual Differences in Language Processing (2).** Examination of the normal variations exhibited across individuals in the acquisition, use, and representation of language. Also considered are individual differences seen in second language learning, the aging process, and language disorders. Prerequisite: instructor's consent.

**C S&D 4900—Clinical Observation in Communication Disorders (1).** Directed clinical observations designed to prepare the student for clinical practicum. Repeated for a total of

2 credit hours. Graded on a S/U basis only. Prerequisite: senior standing and departmental consent. C S&D majors only.

**C S&D 4945—Clinical Apprenticeship in Communication Disorders (1-3).** Supervised observation and clinical experience in speech-language pathology for undergraduates. C S&D majors only. Prerequisite: senior standing and departmental consent.

**C S&D 4950—Research Apprenticeship (cr.arr.)** Research apprenticeship with a faculty member, assisting in the development and execution of research in communication processes and disorders. May be repeated to 6 hrs. maximum. Prerequisite: instructor's consent.

**C S&D 4960—Directed Reading in Communication Science and Disorders (1-3).** Independent reading; reports. Prerequisite: instructor's consent.



# Department of Occupational Therapy

G. McCormack, Chair  
 School of Health Professions  
 406 Lewis Hall  
 (573) 882-3988  
 McCormackg@health.missouri.edu

## Advising Contact

S. Borcharding  
 borcherdings@missouri.edu

L. Brittain  
 brittainlh@missouri.edu

## Scholarship Information Contact

G. McCormack  
 mccormackg@health.missouri.edu

## FACULTY

**ASSISTANT PROFESSOR** S. J. Matsuda  
**CLINICAL PROFESSOR** G. L. McCormack  
**CLINICAL ASSOCIATE PROFESSOR** S. Y. Borcharding  
**CLINICAL INSTRUCTOR** L. H. Brittain, K. Hickey,  
 G. Krug, D. J. Lackey, D. E. Weston  
**INSTRUCTOR** D. J. Baldwin

Occupational therapists are skilled health professionals who provide services to infants, children, adults and elderly persons experiencing physical, emotional or mental limitations in performing everyday activities. The department's philosophy supports a holistic model that emphasizes empowerment and the mind, body, spirit model. The curriculum focuses on the value of occupation in relationship to health and wellness. The department's mission is to produce competent practitioners who can meet the challenges and changes occurring in institutions, community-based programs and educational settings in both urban and rural areas of Missouri.

Occupational therapists are employed in public and private schools, hospitals, rehabilitation centers, mental health facilities, nursing homes, home health agencies, community health programs and industry. As independent health practitioners, they are also involved in business, working with disability claims, in work-hardening programs and wellness/health promotion, or as proprietors of their own therapy services. Occupational therapists also work as educators, administrators, consultants and researchers.

The department offers the bachelor degree followed by the entry level master degree. To become a registered therapist the master degree is required.

Department accreditation is granted by the Accreditation Council for Occupational Therapy Education of the American Occupational Therapy Association, 4720 Montgomery Lane, Bethesda, MD 20814-3425, (301) 652-2682.

## Major Program Requirements – Occupational Therapy

The professional degree program requires three years of course work after completion of all prerequisites and University general education requirements. Six months of field experiences in affiliated clinical and community-based sites, must be completed within 24 months after required didactic courses.

Students with a bachelor's degree must complete the prerequisite courses and meet the University and OT admission requirements.

The following are MU courses. Students transferring from other institutions should seek advice from the OT adviser and select appropriate prerequisite courses for admission. Medical terminology proficiency and at least 30 hours of volunteer or observation is required. In addition to University, college and degree requirements, students must complete the following:

### Major core requirements

#### Prerequisites to the major

COMMUN 1200: Public Speaking .....	3
BIO SC 1010 and 1020: General Principles/Concepts of Biology and Lab OR BIO SC 1500: Intro to Biological Systems w/lab .....	5
PSYCH 2510: Fundamentals of Abnormal Psychology .....	3
PHYSICS 1210: College Physics I.....	4
H D FS 2400: Principles of Human Development.....	3
MPP 3202: Elements of Physiology .....	5
SOCIOLOGY 1000: Introduction to Sociology OR ANTHRO 1000: General Anthropology .....	3
PSYCH 1000: General Psychology.....	3
E&CPSY 4170: Introduction to Educational Statistics OR STAT 1300: Elementary Statistics.....	3
OC THR 1000: Introduction to Occupational Therapy OR HTH PR 1000: Introduction to Health Professions.....	1
HTH PR 2190: Medical Terminology .....	3

#### Departmental course requirements

PTH&AS 4222: Gross Human Anatomy .....	7
OC THR 4060: Professional Issues.....	2
OC THR 4240: Applied Neurophysiology for Allied Health Students .....	3
OC THR 4220: Clinical Kinesiology .....	3
OC THR 4020: Creative Media .....	1
OC THR 4510: Professional Perspectives .....	2
OC THR 4310: Foundation of Occupation .....	4
OC THR 4940: Fieldwork Level I – Disability in Context..	2
HTH PR 3200: Essentials of Pathology .....	2
OC THR 4100: Complementary/Alternative Therapy .....	3
OC THR 4270: Clinical Pathophysiology II .....	3
OC THR 4330: Human Motion and Activity .....	3
OC THR 4410: Developmental Framework .....	3
OC THR 4950: Research Methods.....	3
OC THR 4943: Fieldwork: Clinical .....	1
OT THR 4942: Fieldwork: Older Adults .....	1
HTH PR 4300: Health Care in the United States .....	3
OC THR 4450: Pediatric Practice .....	3
OC THR 4350: Rehabilitation Practice.....	4
OC THR 4550: Psychopathology .....	2
OC THR 4945: Fieldwork Rehabilitation .....	1

### Professional Certification

Upon successful completion of all courses, including field work experiences, students are eligible to sit for the examination of the National Board for Certification in Occupational Therapy, 800 South Fredrick, Suite 200, Gaithersburg, MD 20977-4150, (301) 990-7979. Successful completion of the exam is required by state regulatory agencies before entering into the profession.

### Requirements for Master's degree in Occupational Therapy

The Department of Occupational Therapy has been approved to offer the Master of Occupational Therapy degree as the terminal degree of the program. All students must complete the prerequisite courses and meet the admission requirements to apply. The occupational therapy graduate courses include a minimum of 34 credits beyond the bachelor's degree in OT.

## Sample Eight-Semester Program

### Bachelor of Health Science with a major in Occupational Therapy

Check the *Undergraduate Catalog* for prerequisites.

#### Fall I

HTH PR 1000 .....	1
OC THR 1000 .....	1
IS&LT 1110.....	1
BIO SC 1010 & 1020 or 1500.....	5
MATH 1120 .....	3
PSYCH 1000.....	3
<b>Total.....</b>	<b>14</b>

#### Fall II

H D FS 2400 .....	3
MPP 3202.....	5
Humanities .....	3
ANTHRO 1000 OR SOCIO 1000 OR	
RU SOC 1000 .....	3
Elective .....	2
<b>Total.....</b>	<b>16</b>

#### Summer II

PTH & AS 4222 .....	7
OC THR 4060 .....	2
<b>Total.....</b>	<b>9</b>

#### Fall III

OC THR 4240 .....	3
OC THR 4220 .....	3
OC THR 4020 .....	1
OC THR 4310 .....	4
OC THR 4590 .....	2
HTH PR 3200 .....	2
<b>Total.....</b>	<b>15</b>

#### Winter I

HIST 1100, 1200/POL SC 1100 AmHistory/Gov't or PS ...	3
ENGLISH 1000.....	3
CHEM 1100 .....	3
COMMUN 1200 .....	3
Humanities .....	3
<b>Total.....</b>	<b>15</b>

#### Winter II

PSYCH 2510.....	3
ESC PS 4170/1300.....	3
HTH PR 2190 .....	3
Elective .....	6
<b>Total.....</b>	<b>15</b>

#### Winter III

OC THR 4510 .....	3
OC THR 4270 .....	3
OC THR 4330 .....	3
OC THR 4410 .....	3
OC THR 4943 .....	1
OC THR 4944 .....	1
OC THR 4942 .....	2
<b>Total.....</b>	<b>16</b>

#### Summer III

OC THR 4100 .....	3
OC THR 4770 .....	3
<b>Total.....</b>	<b>6</b>

#### Fall IV

HP 4300.....	3
OC THR 4450 .....	3
OC THR 4350 .....	4
OC THR 4550 .....	2
OC THR 4945 .....	2
OC THR 4950 .....	3
<b>Total.....</b>	<b>17</b>

#### Fall V

OC THR 8002* .....	3
OC THR 8087* .....	3
OC THR 8090* .....	3
<b>Total.....</b>	<b>9</b>

#### Winter IV

OC THR 7000* .....	3
OC THR 8001* .....	3
OC THR 8003* .....	4
OC THR 8004* .....	2
<b>Total.....</b>	<b>12</b>

#### Winter V

OC THR 7983* .....	6
--------------------	---

#### Summer VI

OC THR 7993* .....	6
--------------------	---

\*Please see *Graduate Catalog* for course descriptions

## OCCUPATIONAL THERAPY COURSES

**OC THR 1000—Introduction to Occupational Therapy (1).** Introductory course to provide students information about the occupational therapy profession. Registered therapists lecture on clinical aspects. Students participate in discussions on program requirements, placement, and trends in the profession.

**OC THR 2001—Topics in Occupational Therapy(cr.arr.)** Organized study of selective topics in occupational therapy. Particular topics and credit hours may vary from semester to semester. Prerequisites: freshman or sophomore standing; instructor's consent. Repeatable upon consent of department.

**OC THR 2085—Problems in Occupational Therapy(cr.arr.)** Independent investigation leading to the completion of a project or paper. Prerequisite: freshman or sophomore standing; instructor's consent.

**OC THR 4001—Topics in Occupational Therapy(cr.arr.)** Organized study of selective topics in occupational therapy. Particular topics and credit hours may vary from semester to semester. Prerequisite: junior standing; instructor's consent. Repeatable upon consent of department.

**OC THR 4020—Creative Media (1).** Laboratory course for developing competency in creative media. Emphasis on developing competencies in woodworking, activity analysis and adaptation, and the value of creativity in wellness. Graded on a S/U basis only.

**OC THR 4060—Professional Issues (2).** Occupational therapy roles from philosophical and ethical perspectives. Examines structure of the profession, professional associations, the curriculum, and professional literature. Study of collaboration, creativity and human occupation through experiential activities. Prerequisite: junior standing; acceptance into the major. Graded on A/F basis only.

**OC THR 4085—Problems in Occupational Therapy(cr.arr.)** Independent investigation leading to the completion of a project or paper. Prerequisite: junior standing; instructor's consent. Repeatable upon consent of department.

**OC THR 4100—Complementary Therapies (3).** Introduction to systems of complementary/alternative medicine (CAMs) as it pertains to occupational therapy practice. The course will provide a critical analysis of complementary therapies, techniques, and culture health beliefs. Prerequisite: human anatomy, physiology; Pre/corequisite: clinical pathophysiology. Graded on A/F basis only.

**OC THR 4220—Clinical Kinesiology (3).** Functional anatomy and biomechanics in normal and abnormal conditions of extremities, back, neck and thorax. Dynamics of human motion and motor skills. Muscle testing and goniometry lab.

**OC THR 4240—Applied Neurophysiology for Allied Health Students (3).** (same as Communicative Science and Disorders 4430 and Physical Therapy 4240). Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.

**OC THR 4270—Clinical Pathophysiology (3).** A system approach to normal physiol-

ogy, disease and clinical manifestations of disease.

**OC THR 4310—Foundations of Occupation (4).** The course examines occupation within the health-wellness continuum. Activity analysis and adaptation are performed in laboratory and community experiences. Seminar topics include self awareness, stress management, examination of personal values and human diversity.

**OC THR 4330—Human Motion and Activity (3).** Analysis of movement within the framework of human occupation. Assessment of musculoskeletal function. Participation in activity adaptation and analysis of performance components. Introductory motor control concepts.

**OC THR 4350—Rehabilitation Practice (4).** Analysis of major disability areas from an occupational perspective. Administration and interpretation of assessments and application of treatment theories and approaches for deficits in movement, sensation, cognition and perception.

**OC THR 4410—Developmental Framework (3).** Lecture and Laboratory course designed to provide the occupational therapy student with an understanding of the process of normal development and prepare the student to administer common developmental assessments for infants and young children.

**OC THR 4450—Pediatric Practice (2-3).** Examines occupational therapy process through application of evaluation methods, intervention techniques in school based practice.

**OC THR 4510—Professional Perspectives (3).** Understanding and directing personal and professional communication through experiential activities. Includes formation of a professional and therapeutic relationships, and leadership development. Also concepts of dyad and group dynamics will be presented.

**OC THR 4530—Loss and Disability (3).** Reactions to illness, disability, and death. Identifies the roles of caregivers and patients. Addresses body image, self concept, and adjustment problems met in life when terminal illness or disability is present.

**OC THR 4590—Disability in Context (2).** Community experiences for observational, interviewing, assessment, and relational skills with persons experiencing cross disabilities throughout the lifespan. Overview of professional and therapeutic relationships. Lecture, seminar weekly.

**OC THR 4770—Community Assessment (2).** Focus on role of occupational therapy in health prevention and promotion. Concepts of program evaluations and development provided through community needs assessment and health promotion project. Emphasis on understanding the environment for health care services. Prerequisite: junior standing; acceptance into the major. Graded on A/F basis only.

**OC THR 4942—Fieldwork: Older Adults (2).** Examines the aging process in context of the environment. Develops clinical observation skills through field placement with older adults in support living environments. Opportunities to gather/organize data, plan/implement activities, and develop therapeutic relation-

ships. Prerequisite: completion 1st semester of major in professional curriculum; junior standing. Graded on A/F basis only.

**OC THR 4943—Fieldwork: Clinical (1).** Clinical experience in occupational therapy settings. emphasis on classroom to clinical transition. Exposure to the occupational therapy process; assessment, planning, implementation. Emphasis on professional communication and observational skills. Prerequisite: completion of 1st semester in major in professional curriculum; junior standing. Graded on A/F basis only.

**OC THR 4944—Fieldwork: Children (1).** Development of clinical observation skills via on-site observation of active healthy children. Opportunities to gather/organize data, plan/implement activities, and develop therapeutic relationships with children and their care providers. Prerequisite: completion of first semester of major professional curriculum; junior standing. Graded on A/F basis only.

**OC THR 4945—Fieldwork Rehabilitation (2).** Clinical experiences in occupational therapy practice. Integration and application of theory and techniques in a treatment setting. Emphasis on clinical reasoning and documentation. Lecture, seminar weekly.

**OC THR 4950—Research Methods (3).** Research methodology and efficacy studies emphasizing development of knowledge and skills in critiquing research and professional literature pertinent to occupational therapy. Application of evidence-based research results to practice settings.

**OC THR 4960—Readings in Occupational Therapy(cr.arr.)** Directed readings of the literature and research in occupational therapy. Prerequisite: junior standing, instructor's consent. Repeatable upon consent of department.



# Department of Physical Therapy

M. Minor, Chair  
 Department of Physical Therapy  
 School of Health Professions  
 106 Lewis Hall  
 (573) 882-7103  
 Fax: (573) 884-8369  
 umcshp@missouri.edu  
 http://www.umshp.org/pt/

## FACULTY

**PROFESSOR** M. Brown, M. A. Minor, P. K. Rudeen  
**ASSISTANT PROFESSOR** E. A. Dannecker, S. P. Sayers  
**CLINICAL ASSOCIATE PROFESSOR** C. C. Abbott,  
 M. K. Sanford, K. L. Wingert  
**CLINICAL ASSISTANT PROFESSOR** K. M. Nevins  
**CLINICAL INSTRUCTOR** C. A. Blow, K. Gibson, J. Krug,  
 S. E. Lindaman, J. J. McElroy, E. Prost, P. S. Rubinstein

Physical Therapy involves the evaluation and treatment of physical disability and pain that may result from injury, disease or developmental disability. Prevention of disability and public education are also roles of the physical therapist. Physical therapists use tests and measurements to assess body system dysfunction and determine diagnosis and treatment. Daily living skills, including work, are also addressed.

The University of Missouri-Columbia offers a Master of Physical Therapy degree. No terminal undergraduate degree in physical therapy remains. This reflects the national requirement set forth by the Commission on Accreditation in Physical Therapy Education. Upon completion of the professional phase of the physical therapy curriculum, the Bachelor of Health Science with a major in Pre-Professional Physical Therapy is awarded concurrently with the Master of Physical Therapy degree to students who have completed undergraduate education requirements at MU. It is anticipated that the Doctor in Physical Therapy will be offered beginning Summer 2007. At that point, the BHS and MPT will no longer be offered and students will be required to hold a Bachelor's degree for application to the professional major. See the *Graduate Catalog* for a list of degree requirements and courses.

## ADMISSIONS

### Professional Phase of Physical Therapy Program

Admission to the professional phase of the physical therapy curriculum is selective and occurs by a separate application process administered by the Department of Physical Therapy. Applications are due to the department in January. Acceptance to the University of Missouri-Columbia does not assure admittance to the professional phase of the physical therapy curriculum. An undergraduate degree is not a requirement at this time for admission into the professional phase of the program. Applicants to the professional phase of the physical therapy program must have completed approximately 60 college credits, including all departmental prerequisite course work. Students applying without a bachelor's degree must also have completed all University of Missouri-Columbia general education requirements prior to the start of the professional phase of the physical therapy curriculum.

### Professional Phase - Master of Physical Therapy

Information regarding the professional phase of the physical therapy curriculum can be found in the University of Missouri-Columbia *Graduate School* catalog.

## Sample Eight-Semester Program

**Bachelor of Health Sciences with a Pre-Professional major in Physical Therapy. (Awarded concurrently with the Master of Physical Therapy degree.)**

### Prerequisites

#### Fall I

CHEM 1310 ..... 2^  
 HIST 1100, 1200 OR  
 POL SC 1100 OR 1700.. 3\*  
 HTH PR 1000 ..... 1  
 MATH 1120 ..... 3\*  
 PSYCH 1000..... 3^  
**Total..... 12**

#### Fall II

Humanities ..... 3\*  
 MPP 3202..... 5^  
 PHYSCS 1210 ..... 4^  
 Second psychology + ... 3^  
**Total..... 14-15**

### Professional Phase

#### Summer

PH THR 3022 ..... 1^^  
 PH THR 4222 ..... 7^^  
**Total..... 8**

#### Fall III

PH THR 3200 ..... 2^^  
 PH THR 4120 ..... 1^^  
 PH THR 4240 ..... 3^^  
 PH THR 4250 ..... 3^^  
 PH THR 4380 ..... 3^^  
 PH THR 4420 ..... 3^^  
 PH THR 4960 ..... 3^^  
**Total..... 15**

#### Summer

PH THR 4940 ..... 3^^  
**Total..... 3**

#### Fall IV

HTH PR 4300 ..... 3^^  
 PH THR 4510 ..... 3^^  
 PH THR 4680 ..... 3^^  
 PH THR 4730 ..... 4^^  
 PH THR 4770 ..... 4^^  
**Total..... 17**

#### Fall V

PH THR 8130 ..... 3^^+  
 PH THR 8390 ..... 5^^+  
 PH THR 8940 ..... 5^^+  
**Total..... 13**

MRP: Math Reasoning Proficiency

WI: Writing Intensive (This designation is determined by the Campus Writing Board each term and may be found on their web site.)

+: One psychology course required past general psychology

++: See Graduate Catalog for course descriptions.

\*: One course required; Consult Departmental or School Adviser

#: One course required; Statistics, finite math or calculus.

A course in statistics is the preferred method of satisfying this requirement.

Consult Departmental or School Adviser

\*: University Gen-Ed only

^: Degree/ University Gen-Ed Combination

^^: Degree only

#### Winter I

BIO SC 1010 & 1020,  
 OR 1500 ..... 5^  
 CHEM 1320 ..... 3^  
 ENGLISH 1000..... 3\*  
 Humanities ..... 3\*  
**Total..... 14**

#### Winter II

Humanities ..... 3\*  
 PHYSCS 1220 ..... 4  
 Science elective..... 3-5^^  
 Soc / r.soc / anthro / econ .. 3^  
 Statistics, finite, or  
 calculus ..... 3^^#  
**Total..... 16-18**

#### Winter III

PH THR 4150 ..... 1^^  
 PH THR 4270 ..... 3^^  
 PH THR 4330 ..... 3^^  
 PH THR 4470 ..... 3^^  
 PH THR 4620 ..... 3^^  
**Total..... 13**

#### Winter IV

PH THR 4570 ..... 3^^  
 PH THR 4945 ..... 5^^  
 PH THR 7890 ..... 5^^+  
**Total..... 13**

#### Winter V

PH THR 8087 ..... 3^^+  
 PH THR 8690 ..... 5^^+  
 PH THR 8945 ..... 5^^+  
**Total..... 13**

## PHYSICAL THERAPY COURSES

**PH THR 1000—Introduction to Physical Therapy (1).** Acquaints students with the physical therapy profession including the required educational preparation, practice settings, sample interventions, current issues, trends and research. Graded on S/U basis only.

**PH THR 2420—Inactivity and Disease (2).** (Same as BIOMED 2420). Biology of inactivity as a casual factor in chronic disease.

**PH THR 3001—Topics in Physical Therapy (1-3).** Organized study of a specified area of interest in physical therapy and related subjects. Topics and credit hours will vary. Prerequisite: instructor's consent.

**PH THR 3022—Principles of Physical Therapy (1).** History of physical therapy: the profession; basic skills: first aid, infection control, vital signs; medical terminology. Graded on S/U basis only.

**PH THR 3085—Problems in Physical Therapy (1-3).** Independent study, based upon educational goals, leading to completion of a project or paper. Specific objectives and time line developed with the supervision of a faculty member. Prerequisite: instructor's consent.

**PH THR 4001—Topics in Physical Therapy (1-3).** Organized study of a specified area of interest in physical therapy and related subjects. Topics and credit hours will vary. Prerequisite: instructor's consent.

**PH THR 4085—Problems in Physical Therapy (1-3).** Independent study, based upon educational goals, leading to completion of a project or paper. Specific objectives and time line developed with the supervision of a faculty member. Prerequisite: instructor's consent.

**PH THR 4120—Introduction to Clinical Education I (1).** Focus on professional attributes of communication, teamwork, problem solving, and therapeutic behaviors in a case-based format. Graded on S/U basis only.

**PH THR 4150—Introduction to Clinical Education II (1).** Continuation of Introduction to Clinical Education I with increased time in clinical settings. Graded on S/U basis only.

**PH THR 4240—Applied Neurophysiology for Allied Health Students (3).** (same as Occupational Therapy 4240). Principles of basic neurophysiology, emphasizing correlation of structure and function of the nervous system.

**PH THR 4250—Human Kinesiology (3).** (same as Health Professions 3250) Study of principles of physical laws, biomechanics and anatomic structure relative to human movement. Applications through analysis of daily functional performance, exercise, and sport. Prerequisite: Human Anatomy.

**PH THR 4270—Clinical Pathophysiology (3).** (same as Diagnostic Medical Ultrasound 4234). Abnormal function of organ systems in the presence of disease; clinical manifestations and medical management.

**PH THR 4330—Physical Agents (3).** Biophysics, theory and technique concerning the use of physical agents as adjuncts to exercise programs. Includes thermal, electrical, light, hydrotherapy and mechanical agents.

**PH THR 4380—Clinical Evaluation and Procedures with Laboratory (3).** Principles and procedures of basic evaluation methods

and documentation: muscle strength, range of motion, muscle balance, posture, neurologic tests. Includes laboratory.

**PH THR 4420—Foundations of Therapeutic Exercise (3).** Physiological basis of exercise throughout the lifespan with emphasis on the musculoskeletal, neuromuscular, cardiovascular/pulmonary and integumentary systems and the effects of injury and disease on these systems.

**PH THR 4470—Clinical Kinesiology with Laboratory (3).** Advanced Kinesiology addressing functional mobility; specifics of normal human gait; pathokinetics of gait. Assistive devices; wheelchairs; orthoses and prostheses. Includes laboratory.

**PH THR 4510—Evidence-Based Practice (3).** Clinical research design and methods overview. Critical review of current and historically important professional literature. Effective writing related to clinically applicable research using computer and library resources. Identification of research questions. Prerequisite: departmental consent.

**PH THR 4520—Applied Therapeutic Exercise (3).** Application of therapeutic exercise with an emphasis on evidenced-based exercise prescription, modes and techniques of exercise typically seen in rehabilitation.

**PH THR 4560—Movement Theory and Application (2).** Human sensorimotor development; motor learning; motor control theories; developmental and practical application to exercise; proprioceptive neuromuscular facilitation.

**PH THR 4570—Bridging the Clinical-Research Gap (3).** This class focuses on theories of clinical decision making and Evidence-based Practice, their applications to the clinical setting and dissemination of such information to colleagues in professional forums. Graded on A/F basis only.

**PH THR 4620—Introduction to Orthopedic Physical Therapy with Laboratory (3).** Physical therapy diagnosis, management, and prevention of disorders of the musculoskeletal system; basics of orthopedic manual therapy. Includes laboratory.

**PH THR 4680—Orthopedic Physical Therapy (3).** Physical therapy diagnosis, management, and prevention of disorders of the musculoskeletal system; continuation of orthopedic manual therapy emphasizing the axial skeleton; traction; massage; taping; sport-specific injury rehabilitation; orthotics. Prerequisites: PH THR 4620.

**PH THR 4730—Pediatric Physical Therapy (4).** Physical therapy evaluation and treatment of children with movement dysfunction. Emphasis on therapeutic exercise.

**PH THR 4770—Rehabilitation of the Neurologically Impaired Adult (4).** Physical Therapy evaluation and treatment of adults who have incurred neurological deficits; emphasis on the restorative care of individuals following spinal cord injury, stroke, and traumatic head injury.

**PH THR 4940—Clinical Education I (3).** Full time, supervised clinical experience addressing application of basic skills in patient evaluation and treatment, documentation and professional behaviors. Graded on S/U basis only.

**PH THR 4945—Clinical Education II (5).** Continuation of supervised clinical education. (Capstone course)

**PH THR 4960—Special Readings in Physical Therapy (1-3).** Independent readings selected in consultation with supervising faculty member. Identified educational goals and activities; discussion, annotated bibliography or report. Prerequisite: instructor's consent.

**PH THR 4965—Directed Readings in Physical Therapy (cr.arr.)** Selected readings on specific topics. Prerequisite: instructor's consent.