

CHMY 123 (CHEM 152N) Introduction to Organic and Biological Chemistry	3
M 162 (MATH 150) Calculus	4
FOR/RECM/WBIO 180 Careers in Natural Resources	2
FOR 200 Natural Resources Measurements Camp	2
Electives and General Education	6

### Second Year

FOR 201 Forest Biometrics or WBIO 240 Intro to Biostatistics or STAT 216 (MATH 241) Statistics	3
FOR 295 Elements of Ecological Restoration	3
WRIT 222 (FOR 220) Technical Approaches to Writing	2
FOR 210N Introductory Soils	3
FOR 230 Forest Fire Management	3
PHYS 111N/113N Fundamentals of Physics I & Fundamentals of Physics Lab I or PHYS 211N/213N Fundamentals of Physics with Calculus I & Physic Lab I with Calculus	5
BIOL 221 Cell and Molecular Biology	4
BIOL 223 Genetics and Evolution	4
Electives and General Education	4-5

### Third and Fourth Year

FOR 330 Forest Ecology or BIOL 340 Ecology	3
FOR 385 Watershed Hydrology	3
FOR 445 Ecological Restoration Practicum	3-6
FOR 444 Integrative Ecology Restoration	3
FOR 422 Natural Resource Policy & Administration	3
FOR 365 Foundation of Restoration Ecology	3
FOR 494 Seminar in Ecological Restoration	1
BIOL 350 Rocky Mountain Flora	3

#### Rest/Terrestrial Electives: At least nine credits must be completed from:

BIOL 316 Plant Form & Function	3
FOR 335 Environmental Entomology	3
FOR 250 GIS Practicum	2
FOR 331 Fuels Management	3
FOR 415 Environmental Soil Science	3
FOR 485 Watershed Management	3
FOR 360 Range Management	3
FOR 462 Range Ecology	3
BIOL 444 Plant Physiology	3
BIOL 448 Terrestrial Plant Ecology	3
WBIO 370 Wildlife Habitat Conservation and Management	3
WBIO 470 Conservation of Wildlife Populations	3
MCB 423 Microbial Ecology: Applications	3
Electives and General Education	26

#### Rest/Social-Science Electives: At least three credits must be completed from:

ECNS 433 Environmental Economics	3
FOR 320 Forest Economics	3
FOR 379 Collaboration in Natural Resource Decisions	3
FOR 475 Sociology of Environment and Development	3
FOR/RSCN 449 Climate Change Ethics and Policy	3

### Wild Land Restoration Minor

To earn a minor in Wild Land Restoration, students must fulfill the course requirements listed below.

#### Minor in Wildland Restoration (new requirements as of Autumn 2009)

FOR 265 Elements of Ecological Restoration	3
FOR 365 Foundations of Restoration Ecology	3
FOR 330 Forest Ecology or BIOL 340 Ecology or BIOL 366 Fresh Water Ecology	3
FOR 201 forest Biometrics or WBIO 240 Introduction to Biostatistics or STAT 216 (MATH 241) Statistics	3-4

FOR 210N Introductory Soils	3
BIOL 350 Rocky Mountain Flora or FOR 385 Watershed Hydrology	3
<b>Three credits from the following Natural Science Electives:</b>	
BIOL 308 Biology & Management of Fishes	3
BIOL 350 Rocky Mountain Flora	3
BIOL 448 Terrestrial Plant Ecology	3
WBIO 370 Wildfire Habitat Conservation	3
WBIO 470 Conservation of Wildlife Populations	3
FOR 331 Wildland Fuel Management	3
FOR 335 Environmental Entomology	3
FOR 347 Silviculture	3
FOR 360 Range Management	3
FOR 385 Watershed Hydrology	3
<b>Three credits from the following Social Science Electives: (If one of the proposed social science electives also is required for the students major degree, a second social science elective must be taken)</b>	
FOR 422 Natural Resource Policy & Administration	3
FOR 489E Ethics & Management of Public Lands	3
FOR 379 Collaboration in Natural Resource Decisions	3
FOR 475 Sociology of Environment & Development	3
FOR/RSCN 449 Climate Change Ethics & Policy	3
FOR 482 Wilderness & Protected Areas Management	3

## College of Health Professions and Biomedical Sciences

**David S. Forbes, Dean**

**Lori J. Morin, Assistant Dean for Student Affairs**

The College of Health Professions and Biomedical Sciences offers the Bachelor of Arts in Social Work, the Doctor of Pharmacy (Pharm.D.) degree; the Master of Science degrees in Neuroscience, Pharmaceutical Sciences, and Toxicology; the Master of Public Health degree, the Master of Social Work degree, the Doctor of Physical Therapy degree, and the Doctor of Philosophy (Ph.D.) degrees in Biomedical Sciences, Neuroscience, and Toxicology.

The focus of these programs is to provide a composite of educational experiences that will produce a well-educated person and a highly trained, professional social worker, health care practitioner or scientist.

## Health Science

- [Courses](#)

Health science courses are concerned with fundamental issues in human health and disease and are, therefore, interdisciplinary in both scope and content. They have been designed not only for students anticipating careers in medicine, dentistry, nursing, public health, pharmacy, medical technology, physical therapy, cytotechnology, and numerous other health care professions and services, but for all students interested in individual and community health, the clinical and paramedical arts, and the biomedical sciences. Health sciences courses are listed under two designations: 1) Health Sciences; 2) other disciplines.

### Health Science Courses

#### Health Sciences

- 195 Special Topics
- 201 Living Well: Health and Disability
- 325 Introduction to Gerontology
- 326 Geriatric Practicum
- 327 Montana Gerontology Society Meeting
- 389 Recent Advances in Clinical Medicine
- 395 Special Topics
- 495 Special Topics

#### Anthropology

- 265 Human Sexuality
- 267 Human Genetics
- 343 Culture and Population
- 388 Native American Health and Healing
- 444 Culture, Health and Healing

### **Health and Human Performance**

- 184 Personal Health and Wellness
- 236N Nutrition

### **Microbiology**

- 106N Elementary Microbiology
- 107 Elementary Microbiology Laboratory
- 302 Medical Microbiology

### **Social Work**

- 322 Explorations in Gerontology
- 423 Addiction Studies

### **Pharmacy**

- 110N Use and Abuse of Drugs
- 324 Medicinal Plants
- 395 Indian Health Issues
- 423 Drug Induced Malnutrition

### **Philosophy**

- 421 Medical Ethics

### **Courses**

U = for undergraduate credit only, UG = for undergraduate or graduate credit, G = for graduate credit. R after the credit indicates the course may be repeated for credit to the maximum indicated after the R. Credits beyond this maximum do not count toward a degree.

#### **Health Sciences (HS)**

**U 195 Special Topics Variable cr. (R-6)** Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 201 Living Well: Health and Disability 2 cr.** Offered autumn and spring. The development and implementation of exercise programs for individuals with physical disabilities or chronic illness.

**U 295 Special Topics Variable cr. (R-6)** Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 320 American Indian Health Issues 2 cr.** Offered spring. Same as PHAR 320. An overview of the health issues, health care delivery and payment that affect American Indians.

**UG 324 Medicinal Plants 2-3 cr.** Offered autumn. Same as PHAR 324 and BMED 324. Plants and other natural substances which nourish, heal, injure, or alter the conscious mind.

**U 325 Introduction to Gerontology 3 cr.** Offered spring. Prereq., junior standing or consent of instr. An interdisciplinary discussion of the health and social issues of older persons, utilizing didactic presentations, clinical demonstrations, and curricular modules.

**U 326 Geriatric Practicum 1-3 cr. (R-3)** Offered spring. Prereq., HS 325. Service learning experience in geriatrics in a setting compatible with the student's major and interests.

**U 327 Montana Gerontology Society Meeting 1 cr. (R-3)** Offered spring. Attendance and participation in the Montana Gerontology Society meeting held annually in April.

**U 389 Recent Advances in Clinical Medicine 1 cr. (R-3)** Offered spring. Prereq., junior or senior standing. Weekly presentations throughout the semester by local clinical medical practitioners describing in non-technical terms recent advances in their specialities.

**U 395 Special Topics Variable cr. (R-12)** Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**UG 430 Health Aspects of Aging 3 cr.** Offered spring. Same as HHP and SW 430. Overview of the health aspects of aging in the United States including biological theories of aging, normal physiological changes associated with aging systems, common pathological problems associated with aging, cultural and ethnic differences in the health of elders, health promotion and healthy aging, and the health care continuum of care for older persons.

**UG 495 Special Topics Variable cr. (R-12)** Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

## School of Physical Therapy and Rehabilitation Science

- [Curriculum and Application Process](#)
- [Special Degree Requirements](#)
- [Courses](#)
- [Faculty](#)

### Reed Humphrey, Chair

The professional program in physical therapy grants the Doctor of Physical Therapy (D.P.T.) degree. The program has an entry-level D.P.T. program, an entry-level D.P.T./M.B.A. program, and a post-entry level transitional D.P.T. program. The following section describes the profession and the pre-professional requirements and application procedures. This information also is available on the program website at [www.health.umt.edu/schools/pt](http://www.health.umt.edu/schools/pt).

### The Profession

Physical Therapy is a health care profession concerned with the habilitation and rehabilitation of individuals having limitations resulting from pathological, surgical, or traumatic conditions. The profession is also concerned with prevention of disability in an effort to promote maximal use of an individual's capacities. Physical therapists are trained to evaluate neurological, musculoskeletal, cardiovascular, respiratory, and integumentary disorders. Exercise and physical agents, such as heat, cold, light, electricity, and massage are used to promote healing, relieve pain, maintain or restore strength, and improve joint range of motion and functional capabilities. Physical therapists play key roles in: 1) the physical therapy diagnosis and treatment of musculoskeletal injuries, 2) wellness and injury prevention, 3) rehabilitating injured workers to return to their jobs, 4) rehabilitating senior citizens after debilitating disease to enable them to remain independent, 5) helping handicapped children to live within the least restrictive environment, 6) preventing and treating sports related injuries, and 7) conducting research in the basic and clinical sciences. Knowledge of the psychological and social ramifications of disability affecting the individual and his or her family is an integral part of physical therapy intervention.

Physical therapy is practiced in diversified settings, including hospitals, clinics, skilled nursing facilities, sports medicine programs, public schools, and private practices. Legislation in Montana permits direct public access to physical therapists for evaluation and treatment without a physician referral. Even so, physical therapists remain committed to functioning as an integral member of the health care team.

The physical therapy educational program at The University of Montana seeks to prepare physical therapists who have a broad base of skills upon graduation, and who will be able to implement physical therapy services in many settings, especially rural environments. Rural settings require a physical therapist to serve not only as a provider of direct patient care, but to fulfill the roles of administrator, supervisor, teacher, consultant, and researcher. Students successfully completing the professional program meet the competencies for physical therapy as determined by the Commission on Accreditation in Physical Therapy Education of the American Physical Therapy Association, a Doctor of Physical Therapy degree, and are prepared for state licensure.

The Physical Therapy Program is accredited by the Commission on Accreditation in Physical Therapy Education of the American Physical Therapy Association through 2018.

### High School Preparation:

Specific high school courses are not required but a background is recommended in mathematics, chemistry, biology, physics, English, and other communication skills.

### Pre-Professional Physical Therapy Curriculum and Application Process

Students wishing to apply to the professional physical therapy program at The University of Montana-Missoula may select any major for their undergraduate degree. While pre-physical therapy is not a degree granting major at the University, prospective applicants should list pre-professional physical therapy (PPPT) as their second major. This will allow them also to receive advising from the School of Physical Therapy and Rehabilitation Science in order to assure adequate preparation for the professional program. In addition to completing a baccalaureate degree, applicants must take the following prerequisite courses and meet the additional application requirements listed. All prerequisite courses must be taken for a traditional letter grade and must be completed with a grade of "C" (2.00) or better.

### Prerequisite Courses and Credits

Human Anatomy and Physiology: minimum of two semesters or two to three quarters of human anatomy and physiology. This course work must be completed in a Biology, Anatomy and/or Physiology department. A full sequence must be completed of two semesters or two to three quarters, depending upon what is offered by the institution. A comparative vertebrate anatomy and an animal physiology course may be substituted for human anatomy and physiology.

Chemistry: minimum of two semesters or three quarters of chemistry with laboratory. A full sequence must be completed of two semesters or two to three quarters, depending upon what is offered by the institution.

Physics: minimum of two semesters or three quarters of physics with laboratory. A full sequence must be completed of two semesters or two to three quarters, depending upon what is offered by the institution.

Statistics: minimum of one semester or quarter of statistics course work.

Exercise Physiology: minimum of one semester or quarter of exercise physiology with laboratory. Online lecture-only courses do not meet this requirement.

Social Sciences: minimum of two semesters or three quarters of social/behavioral science classes. These classes may include courses offered by Psychology, Educational Psychology, Sociology, Social Work, Cultural Geography and Anthropology departments.

Certification in adult, child, and infant CPR is assumed.

Computer literacy is assumed. You should be able to utilize email communication, word processing, statistical and spreadsheet programs and be able to complete searches on the Web.

### **Suggested Prerequisite Courses at The University of Montana-Missoula**

BIOL 312, 313 Anatomy and Physiology I, II or SCN 201, 202	8
CHMY 121N, 123N, 124N (CHEM 151N, 152N, 154N) Intro to General Chemistry, Intro to Organic & Biochem and Laboratory	8
PHYS 111N and 113N, 112N and 114N Fundamental Physics I, II	10
HHP 377-378 Exercise Physiology with laboratory (Exempt from HHP 226 prerequisite)	4
PSYX 100S (PSYC 100S) Introduction to Psychology or SOCI 101S (SOC 110) Introduction to Sociology or ANTH 101H Introduction to Anthropology or PSYX 340S (PSYC 330S) Abnormal Psychology or PSYX 230S (PSYC 240S) Developmental Psychology	7
STAT 216 (MATH 241) Introduction to Statistics or PSYX 222 (PSYC 240S) Psychological Statistics or SOCI 202 Social Statistics	4
HHP 288, 289 Advanced First Aid/CPR.	
Computer literacy required.	

### **Additional Requirements for Application**

Because the professional program is sequential, students must enter the program in the autumn semester of the first professional year.

Online application and information about admissions policies for the professional program are available from the School of Physical Therapy and Rehabilitation Science website [www.health.umt.edu/schools/pt](http://www.health.umt.edu/schools/pt). Application fees are required with one going to PTCAS and another going to the School of Physical Therapy and Rehabilitation Science. Questions about admission should be addressed to [physical.therapy@umontana.edu](mailto:physical.therapy@umontana.edu).

The application documentation must be submitted online by December 15 (PTCAS application and School Supplemental application) and the supporting documents must be forwarded directly to the Chair, Student Selection Committee, School of Physical Therapy and Rehabilitation Science, arriving no later than December 15, preceding the autumn semester of the year for which admission is requested. The Graduate Record Exam (GRE) must be completed by November 15 and the scores sent to The University of Montana. (Institution code 4489, Department code 0619)

To be considered for admission, an applicant must have obtained a cumulative grade average of at least 2.75 (on a four-point scale) in all college courses for which the applicant has registered, as well as a minimum of 3.00 in the required pre-requisite course work. Some preference will be given to Montana residents. To qualify as a resident applicant, the student must be a Montana resident on the closing date for submission of the application for admission.

In addition to these requirements, applicants must demonstrate an appreciation and knowledge of the practical duties and responsibilities of the physical therapist through direct exposure in a variety of clinical settings (a minimum of 80 hours of work or observation under the direct supervision of a physical therapist before application). At least 3 different clinical settings must be included in the 80 hours of observation - outpatient, inpatient acute care, rehab/sub-acute rehab, skilled nursing/extended care, school/pediatrics, or home health. These observation hours must be completed before application submission. Applicants are expected to participate in activities beyond their academic pursuits, such activities should include employment, volunteer activities (school, sport, community, or church) and employment/volunteer activities interacting with people with disabilities.

Application documentation includes three letters of recommendation, one of which must be from a licensed physical therapist. These letters

will be submitted electronically through the PTCAS application.

After completed applications have been received, the Selection Committee will screen the applications based on grade average in pre-requisite courses, overall grade average, GRE scores, stated purpose, evidence of leadership, honors, community service, and letters of recommendation. Based upon the results of this screening, only those applicants who appear best qualified will be invited for a personal interview. Although an invitation to appear for interview does not assure the applicant a place in the class, the final selection will be made from those interviewed. All applicants will be notified in writing of their status.

### Professional Physical Therapy Program

The professional entry-level D.P.T. program is 33 months in length. Enrollment is limited to 34 students in each class. All students pay first level graduate tuition and fees plus a tuition surcharge each Autumn and Spring Semesters. The students will also pay first level tuition and fees for two summer sessions.

### Joint MBA/DPT Program

Students who wish to participate in this joint dual degree program must satisfy the normal admission requirements for both The School of Physical Therapy and Rehabilitation Science's entry -level DPT program and The School of Business Administration's MBA program. Students cannot enter the joint program until they have been accepted separately by both schools. If accepted by both programs, permission to participate in the joint program must be obtained from both the Chair of the DPT program and the Director of the MBA program. Students completing this dual degree program will receive two separate degrees, the DPT and the MBA. Requirements consist of competing 32 credits for the MBA including 8 transferred in from the School of Physical Therapy and Rehabilitation Science and 118 total credits for the DPT including 8 transferred from the School of Business Administration. Students will work with faculty advisors from both programs to determine an appropriate curricular schedule.

## Special Degree Requirements

Once admitted into the professional entry-level Physical Therapy Program, all students must achieve a C grade or higher (or a CR, in credit/no credit) in all required courses in the physical therapy curriculum. Because courses in the curriculum are sequential, a student who fails to achieve a C grade (or a CR, in credit/noncredit courses) in any course may not be allowed to continue in the next semester of the professional program. The student must retake the course at the next offering. Students must maintain a minimum 2.50 grade average while in the professional entry-level D.P.T. program. Students who do not maintain this average will be on academic probation and must achieve the 2.50 grade average in order to graduate. Students who fail to progress in the expected manner for two consecutive years will be dismissed from the Physical Therapy Program subject to review by the Academic Requirements Committee and the Dean of the College of Health Professions and Biomedical Sciences. Students also must comply with all School academic and professional conduct policies as outlined in the Physical Therapy Program Student Handbook. All students enrolled in the program are expected to maintain a full-time academic course load (minimum of 12 semester credits) during each semester of the program.

### Professional Physical Therapy Curriculum

	<b>First Professional Year</b>	<b>A</b>	<b>S</b>
PT 503 Physical Therapy and Health Care System	4	-	
PT 510 Applied Clinical Anatomy and Kinesiology	5	-	
PT 516 Musculoskeletal Evaluation I	6	-	
PT 519 Musculoskeletal Evaluation II	-	6	
PT 520 Development Through the Life Span	-	3	
PT 526 Physical Therapy Interventions I	4	-	
PT 527 Electrophysiological Testing	-	2	
PT 528 Physical Therapy Interventions II	-	4	
PT 529 Biomechanics and Exercise Interventions	2	-	
PT 536 Neurosciences for the Health Professions	-	5	
PT 560 Introduction to Research	-	1	
PT 582 Clinical Experience I	-	1	
Total		21	22

<b>Summer Session</b>	<b>Credits</b>
PT 587 Clinical Internship I	4

	<b>Second Professional Year</b>	<b>A</b>	<b>S</b>
PT 525 Clinical Medicine and Pharmacology	2	-	
PT 561 Research in Physical Therapy	2	-	
PT 562 Scholarly Project I	1	-	
PT 563 Cardiopulmonary Physical Therapy	3	-	
PT 565 Physical Therapy for Children	2	-	

PT 566 Advanced Anatomy Laboratory	(1)	(1)
PT 567 Neurorehabilitation I	3	-
PT 568 Neurorehabilitation II	-	2
PT 569 Orthopedic Physical Therapy I	3	-
PT 572 Practice and Administration	-	2
PT 573 Orthopedic Physical Therapy II	-	2
PT 575 Physical Therapy Interventions III	-	4
PT 576 Synthesis of Clinical Evaluation and Intervention	-	1
PT 578 Physical Therapy Interventions IV	-	4
PT 588 Clinical Internship II	-	4
PT 671 Scholarly Project II	-	1
Total	16-17	19-20

### Summer Session Credits

PT 589 Clinical Internship III 5

### Third Professional Year A S

PT 626 Primary Care in Physical Therapy	3	-
PT 627 Prevention, Wellness, and Education	2	-
PT 672 Research in Physical Therapy II	2	-
PT 570 Psychology of Illness and Disability	2	-
PT 676 Clinical Mastery in Physical Therapy	4	-
PT 679 Trends in Clinical Practice (may be repeated)	4	-
PT 690 Clinical Internship IV	-	12
Total	17	12

Seven credits of professional elective course work are required for the D.P.T. These may be satisfied by PT 671, 672, 679 sections or courses outside the school. Only 6 credits may be independent study.

Total credits required for graduation: 118

## Transitional D.P.T. Curriculum

The mission of the transitional Doctor of Physical Therapy (tDPT) curriculum is to provide an affordable, practical, and career-enhancing plan of study that allows licensed physical therapists to transition their current entry-level professional degree to the Doctor of Physical Therapy degree. The program of study offers licensed physical therapists with an academic degree in Physical Therapy the opportunity to earn the Doctor of Physical Therapy (DPT) degree. The focus of the program is to bridge the gap between current DPT and prior degree entry-level expectations. The program is delivered in a distance-education format, although students are required to attend a weekend during the course of study for a two-day seminar in concepts of professionalism in an autonomous profession and other requirements as identified in the program of study.

## Admission Requirements

Applicants must:

- Provide evidence of being currently licensed to practice physical therapy in a state or jurisdiction of the United States; and
- Complete a graduate admission application supplied by the School of Physical Therapy and Rehabilitation Science at The University of Montana, including official transcripts from the institution awarding the entry-level physical therapy degree.
- Scores from the Graduate Record Examination (GRE). Candidates without available GRE scores may also satisfy admission requirements by supplying evidence meeting the following criteria:
  - The applicant has a graduate degree in the field from an accredited institution, along with at least one other qualification from (a), (b), or (c) below.
  - OR
  - The applicant has a GPA from an accredited undergraduate institution sufficient for success in the graduate program along with at least two other qualifications from (a), (b), or (c) below.
  - (a) Extensive, high-level, and relevant experience in the field of physical therapy as documented in the tDPT application.
  - (b) Record of high quality scholarly contributions such as publications in peer-reviewed journals or presentations at relevant professional meetings.
  - (c) Demonstration of ability to function with excellence in the discipline through submission of a writing sample (as requested in the tDPT application).
- Agree to the program of study in the School of Physical Therapy and Rehabilitation Science prior to matriculation. The admissions committee will review the application and transcript(s) to ensure compliance with entry-level accreditation requirements for the DPT degree. Credits earned in the tDPT curriculum in combination with those previously earned in the professional phase of entry-level preparation and other relevant coursework must be commensurate with the requirements for completion of the entry-level DPT degree awarded at The University of Montana.

Individuals with a master's degree can complete the tDPT curriculum in five consecutive semesters; bachelor's degree participants require an additional five courses, adding two semesters (seven total semesters).

### **Minimum Grade and Academic Progression Requirements**

Students must receive a minimum grade of C in all tDPT courses. Students who receive a grade of C- or lower must repeat the course to achieve a grade of B or better to pass the course. Repetition of courses will result in additional tuition charges. Students must achieve a grade point average of 3.0 or greater in the prescribed program of study to graduate from the tDPT curriculum. Only the grades within the tDPT curriculum will be included in the calculation of the GPA. Failure to maintain a 3.0 GPA for two semesters will result in dismissal from the tDPT curriculum.

### **Degree Requirements**

For candidates holding an entry-level master's degree, successful completion of a 20 credit core curriculum that includes:

#### **Semester One**

PT 652 Pharmacology in Rehabilitation (2 cr.)  
PT 654 Clinical Decision Making: Guide to PT Practice (1cr)

#### **Semester Two**

PT 653 Legal and Ethical Issues for PTs (1 cr.)  
PT 655 Business and Marketing (2 cr.)

#### **Semester Three**

PT 656 Coding and Reimbursement (1 cr.)  
PT 651 Medical Imaging and Rehabilitation (2 cr.)  
PT 657 Professionalism: The Doctoring Profession (2 cr.)

#### **Semester Four**

PT 650 Screening for Medical Disorders (2 cr.)  
PT 658 Critical Assessment and Application of Best Evidence (3 cr.)

#### **Semester Five**

PT 659 Capstone Project (4 cr.)

For bachelor's candidates, semesters 1-4 are the same as above; semester 5-7 are as follows:

#### **Semester Five**

PT 660 Management of Patients with Musculoskeletal Disorders (2 cr.)  
PT 661 Management of Patients with Cardiovascular and Pulmonary Disorders (2 cr.)

#### **Semester Six**

PT 662 Management of Patients with Neurological Disorders  
(2 cr.)  
PT 663 PT Management of Patients with Integumentary Disorders (2 cr.)

#### **Semester Seven**

PT 664 Wellness and Health Promotion (2 cr.)  
PT 659 Capstone Project (4 cr.)

Candidates unable to complete PT 659 by the course completion date will receive an incomplete grade. The incomplete must be resolved within one month of receipt; otherwise a failing grade will be issued and the course must be repeated with an additional tuition charge.

### **Courses**

U = for undergraduate credit only, UG = for undergraduate or graduate credit, G= for graduate credit. R after the credit indicates the course may be repeated for credit to the maximum indicated after the R. Credits beyond this maximum do not count toward a degree.

### **Physical Therapy (P T)**



**U 496 Independent Study Variable cr.** (R-12) Offered intermittently. UG 497 Research 1-10 cr. (R-10) Offered autumn and spring. Prereq., consent of instr.

**UG 497 Research 1-10 cr.** (R-10) Offered autumn and spring. Prereq., consent of instr.

**G 503 Physical Therapy and the Health Care System 4 cr.** Offered autumn. An introduction to physical therapy and its relationship to the health care system. Topics include introduction to the PT literature, medical terminology, medical records, communication, ethics, and professional issues in physical therapy.

**G 510 Applied Clinical Anatomy and Kinesiology 5 cr.** Offered autumn. Prereq., course in human anatomy and consent of instr. Anatomy of the neuromusculoskeletal system and body cavities in relation to movement, function and clinical correlates.

**G 516 Musculoskeletal Evaluation I 6 cr.** Offered autumn. Coreq., PT 510, 529. Principles of physical therapy examination and evaluation including pathology, imaging, patient interviews, tests and measures.

**G 519 Musculoskeletal Evaluation II 6 cr.** Offered spring. Prereq., PT 510, 516. Continuation of PT 516. Physical therapy examination and evaluation including pathology, imaging, patient interviews, tests and measures.

**G 520 Development Through the Life Span 3 cr.** Offered spring. Prereq., PT 510, 511. Process-based learning course covering human development with emphasis on motor development including pediatrics and geriatrics and a review of geriatric care programs.

**G 525 Clinical Medicine and Pharmacology 2 cr.** Offered autumn. Pathology, evaluation, differential diagnosis, pharmacology, management of oncological, endocrine, metabolic, GI, renal, and immunological pathology.

**G 526 Physical Therapy Interventions I 4 cr.** Offered autumn. Coreq., PT 516, 529. Basic skills of transfers, bedmobility, gait assistive device use, soft tissue mobilization, and application of physical agents.

**G 527 Electrophysiological Testing and Therapeutics 2 cr.** Offered spring. Physiology, indications, contraindications, and application of physical agents. Theory and application of electrodiagnosis and electrotherapy procedures.

**G 528 Physical Therapy Interventions II 4 cr.** Offered spring. Prereq., PT 526, 529. Coreq., PT 519. Continuation of PT 526. Basic principles of PNF. Application and prescription of therapeutic exercise to various patient problems and environments, including gait functional training, and aquatics. Emphasis on equipment analysis and patient education.

**G 529 Biomechanics and Exercise Interventions 2 cr.** Offered autumn. Coreq., PT 516, 526. Principles of upper extremity biomechanics, exercise prescription, and exercise and other therapeutic interventions for the upper extremity and cervical spine.

**G 536 Neurosciences for the Health Professions 5 cr.** Offered spring. Anatomy of the head and neck, and neuroanatomy of the human nervous system with emphasis on evaluation of central nervous system lesions and pathological conditions, clinical applications to physical therapy.

**G 560 Introduction to Research 1 cr.** Offered spring. Introduction to the research process in physical therapy including evidence based practice, faculty research tracks, and laboratories. Includes beginning literature review for special/research project.

**G 561 Research Methods in Physical Therapy 2 cr.** Offered autumn. Prereq., STAT 216 (MATH 241). Research design and statistical analyses in physical therapy and related sciences.

**G 562 Scholarly Project I 1 cr.** Offered autumn. Directed research with individual faculty advisor to develop proposal for research/special project.

**G 563 Cardiopulmonary Physical Therapy 3 cr.** Offered autumn. Prereq., PT 528, PT529. Cardiovascular and pulmonary pathology, pharmacology, and differential diagnosis. Physical therapy assessment and interventions for patient's with cardiovascular and/or pulmonary disease.

**G 565 Physical Therapy for Children 2 cr.** Offered autumn. Prereq., PT 520, PT 536. Evaluation and intervention of neuromotor and musculoskeletal physical therapy rehabilitation of children. Physical therapy for children in school systems.

**G 566 Advanced Anatomy Laboratory 1 cr.** Offered autumn and spring. Prereq., PT 510, 511. Regional dissection and study of the back, neck, upper extremity and lower extremity, including clinical correlates.

**G 567 Neurorehabilitation I 3 cr.** Offered autumn. Prereq., PT 536. Neurologic physical therapy assessment and intervention of adults with cerebrovascular accidents, Parkinson disease, or multiple sclerosis. Motor control and motor learning and application to physical therapy neurorehabilitation. Includes wheelchair and home assessment.

**G 568 Neurorehabilitation II 2 cr.** Offered spring. Prereq., PT 536. Neurologic physical therapy assessment and intervention of adults with traumatic brain injury or spinal cord injury.

- G 569 Orthopedic Physical Therapy I 3 cr.** Offered autumn. Prereq., PT 510, 516, 519, 528, 529. Patient/client management of orthopedic condition of the extremities.
- G 570 Psychology of Illness and Disability 2 cr.** Offered autumn. Psychological response to illness and disability to include patient motivation, patient/professional interaction, and treatment of persons with chronic pain.
- G 572 Practice and Administration 2 cr.** Offered spring. Organization and management of the physical therapy department with emphasis on the therapist's role as administrator, supervisor and consultant.
- G 573 Orthopedic Physical Therapy II 2 cr.** Offered spring. Prereq., PT 516, 519, 569. Patient/Client management of orthopedic conditions of the spine.
- G 575 Physical Therapy Interventions III 4 cr.** Offered spring. Prereq., PT 528, PT 529. Coreq., PT 578. Includes units in burns and wound care, prosthetics, plus the American Disabilities Act and the management of chronic disability.
- G 576 Synthesis of Clinical Evaluation and Intervention 1 cr.** Offered spring. Synthesis and analysis of PT evaluation and intervention through case reports.
- G 577 Applied Clinical Teaching in Physical Therapy 1-2 cr.** Offered autumn. Teaching experience in practical application of clinical therapy.
- G 578 Physical Therapy Interventions IV 4 cr.** Offered spring. Prereq., PT 528, PT 529. Coreq., PT 575. Physical therapy assessment and interventions are addressed in the areas of occupational health, pelvic floor dysfunction, obstetric client care, advanced orthotics and activities of daily living.
- G 582 Clinical Experience I 1 cr.** Offered spring. Clinical experience in physical therapy departments.
- G 587 Clinical Internship I 4 cr.** Offered summer. Prereq., PT 582. Seven weeks of full-time clinical experience with emphasis on developing patient treatment skills.
- G 588 Clinical Internship II 4 cr.** Offered spring. Prereq., PT 587. Five weeks of full-time clinical experience with emphasis on patient evaluation and continuation of developing patient treatment skills.
- G 589 Clinical Internship III 5 cr.** Offered summer. Prereq., PT 588. Eight weeks of full-time clinical experience with emphasis on learning about administrative issues, problem-solving, time management, and communication skills. Continuation of development of patient treatment and evaluation skills.
- G 594 Seminar Variable cr.** (R-6) Offered autumn and spring.
- G 595 Special Topics Variable cr.** (R-4) Offered autumn and spring. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.
- G 596 Independent Study Variable cr.** (R-6) Offered autumn and spring.
- G 597 Research 1-10 cr.** (R-10) Offered autumn and spring. Prereq., consent of instr.
- G 626 Primary Care 3 cr.** Offered autumn. Differential diagnosis of system pathology including basic verbal and physical screening, laboratory tests and pharmacological intervention. Clinical medicine of infectious diseases, hematology, gastrointestinal and urogenital systems.
- G 627 Prevention, Wellness, and Education 2 cr.** Offered autumn. Nutrition, health promotion, patient and support network education, exercise/fitness, disease and injury prevention, life span emphasis.
- G 650 Screening for Medical Disorders 2 cr.** Offered autumn, spring. Prereq. Enrolled in t-DPT curriculum. PT's role, responsibilities, and decision-making processes regarding appropriate referral of a patient to a physician for evaluation of medical conditions outside the scope of physical therapy.
- G 651 Medical Imaging and Rehabilitation 2 cr.** Offered autumn, summer. Prereq. Enrolled in t-DPT curriculum. Provide the physical therapy clinical learner with the tools needed to interpret and apply specialized medical imaging information to the rehabilitation patient.
- G 652 Pharmacology in Rehabilitation 2 cr.** Offered autumn, spring. Prereq. Enrolled in t-DPT curriculum. Provide clinical learners with the primary drug classes and the physiologic basis of their action.
- G 653 Legal and Ethical Issues for Physical Therapists: Considerations in Risk Management 1 cr.** Offered spring, summer. Prereq. Enrolled in t-DPT curriculum. Foundational information as to the legal, ethical and administrative decision making process often facing physical therapists in clinical practice.

**G 654 Clinical Decision Making: Guide to Physical Therapist Practice 1 cr.** Offered autumn, spring. Prereq. Enrolled in t-DPT curriculum. Provide ways to utilize the Guide to PT Practice for effective and efficient clinical decision making.

**G 655 Business and Marketing 2 cr.** Offered spring, summer. Prereq. Enrolled in t-DPT curriculum. Enhance the PT clinical learner's appreciation of business and management practices needed to succeed within the current healthcare landscape.

**G 656 Coding and Reimbursement 1 cr.** Offered autumn, summer. Prereq. Enrolled in t-DPT curriculum. Educate the clinical learner in analyzing reimbursement of current billing, accounts receivable, collection procedures and use of proper coding.

**G 657 Professionalism: The Doctoring Profession 2 cr.** Offered summer. Prereq. Enrolled in t-DPT curriculum. This seminar course provides the clinical learner with the opportunity to analyze and discuss the roles/responsibilities and challenges/opportunities inherent in doctoral level physical therapy practice.

**G 658 Critical Assessment and Application of Best Evidence 3 cr.** Offered autumn, spring. Prereq. Enrolled in t-DPT curriculum. Develop skills in the application of evidence-based practice as a model for effective clinical decision-making.

**G 659 Capstone Project 4 cr.** Offered spring, summer. Prereq. Enrolled in t-DPT curriculum. Development of the skills needed by physical therapists to fulfill their role as effective participants in the research process. Guide student through the capstone case report completion process.

**G 660 Management of Patients with Musculoskeletal Disorders 2 cr.** Offered autumn, spring, summer. Prereq., enrolled in t-DPT curriculum. PT's role, responsibilities, and decision-making processes regarding patients with musculoskeletal disorders.

**G 661 Management of Patients with Cardiovascular and Pulmonary Disorders 2 cr.** Offered autumn, spring and summer. prereq., Enrolled in t-DPT curriculum. PT's role, responsibilities and decision-making processes regarding appropriate patient management of persons with cardiovascular and/or pulmonary disorders.

**G 662 Management of Patients with Neurological Disorders 2 cr.** Offered autumn, spring, summer. Prereq., enrolled in t-DPT curriculum. PT's role, responsibilities, and decision-making processes regarding patients with neurological disorders.

**G 663 Management of Patients with Integumentary Disorders 2 cr.** Offered autumn, spring, summer. Prereq., Enrolled in t-DPT curriculum. PT's role, responsibilities, and decision-making processes regarding patients with integumentary disorders.

**G 664 Wellness and Health Promotion 2 cr.** Offered autumn, spring, summer. Prereq., Enrolled in t-DPT curriculum. PT role, responsibilities, and decision-making processes regarding patient/client involvement with wellness and health promotion.

**G 671 Research in Physical Therapy I 1 cr.** Offered spring. Prereq., D.P.T. student. Data collection for research/special project.

**G 672 Research in Physical Therapy II 2 cr.** Offered autumn. Data analysis, writing of research manuscript, presentation of project.

**G 673 Advanced Practice and Administration II 2 cr.** Offered spring. Topics build on content presented in PT 503 and 572. Emphasis on identifying key niches in health care and development of a business plan.

**G 676 Clinical Mastery in Physical Therapy 4 cr.** Offered autumn. Learner-centered course synthesizing PT examination, evaluation, diagnosis, prognosis, intervention, outcomes, reimbursement, education, delegation, and wellness.

**G 679 Trends in Clinical Practice 1-2 cr.** (R-4) Offered autumn. Focus on advanced clinical topics in physical therapy.

**G 690 Clinical Internship IV 12 cr.** Prereq., PT 589. Custom-designed clinical internship of 15 weeks. Includes writing and presentation of case study or special project.

**G 696 Independent Study 1-4 cr.** (R-4) Offered intermittently.

**G 697 Research 1-10 cr.** (R-10) Offered autumn and spring. Prereq., consent of instr.

## Faculty

### Professors

- Reed Humphrey, Ph.D., University of Pittsburgh, 1986; P.T., Virginia Commonwealth University, 1994 (Chair)
- Charles Leonard, Ph.D., Medical College of Pennsylvania, 1985; P.T., Duke University, 1978

### Associate Professors

- Beth Ikeda, M.S., D.P.T., Massachusetts General Hospital Institute of Health Professions, 1989, 2004, P.T., Mayo School of Health Related Science, 1981
- James J. Laskin, Ph.D., University of Alberta, 2001; P.T., University of Saskatchewan, 1987

## Assistant Professors

- Steven Fehrer, Ph.D., University of Minnesota, 1984; P.T., Arcadia University, 1995
- David L. Levison, M.H.S., Indianapolis Krannert School of Physical Therapy, 1996; P.T., University of Montana, 1986
- Kimberly J. Mize-Humphrey, D.P.T., Rocky Mountain University of Health Professions, 2006., P.T., University of Wisconsin-LaCrosse, 1996
- Ryan Mizner, Ph.D., University of Delaware, 2005; P.T., University of Delaware, 2000
- Sara Scholtes, Ph.D., Washington University, 2009; P.T., Washington University, 2004

## Nora Stael Evert Physical Therapy & Rehabilitation Clinics

### UM Sports & Orthopedic Clinic

- Brenda Mahlum, D.P.T., Rocky Mountain University of Health Professions, 2006; P.T., University of North Carolina, 1984
- Mary Coar, B.S., P.T., The University of Montana, 1993

### New Directions Wellness Center

- Susan Ostertag, D.P.T., Arizona School of Health Sciences, 2007, B.S., P.T., University of Montana, 1993
- Jessica Malouf, D.P.T., University of Montana, 2008
- Molly Blair, B.S., University of Montana, 2002

## School of Public and Community Health Sciences

- [Special Degree Requirements](#)
- [Courses](#)
- [Faculty](#)

### Craig Molgaard, Professor and Chair

The School of Public and Community Health Sciences is an interdisciplinary program that offers the Master of Public Health (M.P.H.) degree and a Certificate of Public Health (C.P.H.). The program is designed to prepare individuals for public health practice who can effectively address the challenges of rural and global health. Predominantly on-line, web-based instruction allows both traditional students and working professionals to pursue a degree or certificate. This program addresses current and forecasted needs for graduate education in public health. The program's focus on rural and global population health problems assists in promoting improvement in the health of the people of Montana and throughout the world.

### Special Degree Requirements

For the M.P.H. degree, all students must successfully complete 42 graduate credits, including 36 required core credits and 6 elective credits. The following core courses are required:

- PUBH 510 Introduction to Epidemiology
- PUBH 520 Fundamentals of Biostatistics
- PUBH 530 Administration and Management in the U.S. Health Care System
- PUBH 535 Health Policy
- PUBH 540 Social and Behavioral Sciences in Public Health
- PUBH 550 Program Evaluation and Research Methods
- PUBH 560 Environmental and Rural Health
- PUBH 570 Ethical Issues in Public Health
- PUBH 580 Rural Health Issues in a Global Context
- PUBH 591 Practicum
- PUBH 593 Professional Portfolio
- PUBH 599 Professional Paper

M.P.H. students may take 6 or more elective credits of courses offered from the School of Public and Community Health Sciences or from other departments in order to create a plan of study that tailors the learning experience to the needs of the student. PUBH elective courses include:

- PUBH 512 Neuroepidemiology
- PUBH 515 Public Health Genetics
- PUBH 595 Special Topics
- PUBH 596 Independent Study
- PUBH 597 Research

For the Certificate of Public Health, students must complete any 12 pre-approved credits from the above list of core courses. Approval of a specific 12 credit program is part of the Certificate of Public Health admission process.

## Courses

G = for graduate credit. R after the credit indicates the course may be repeated for credit to the maximum indicated after the R. Credits beyond this maximum do not count toward a degree.

### Public Health (PUBH)

**G 510 Introduction to Epidemiology 3 cr.** Offered autumn. Principles and methods of epidemiologic investigation, descriptive and analytic epidemiology techniques, disease frequency, risk determination, study designs, causality, and validity.

**G 512 Neuroepidemiology 3 cr.** Offered spring odd-numbered years. An overview of the fundamental considerations of the history, scope, and methods of neuroepidemiology as a subfield of epidemiology. Specific neurologic diseases and injuries will be studied as to distribution and risk factors, as well as the relationship to international public health.

**G 515 Public Health Genetics 3 cr.** Offered autumn. Basic principles of genetics and genomics, application to public health practices and research. Includes issues in public health genetics such as informed consent, screening for genetic susceptibility, and ethical, legal and social implications.

**G 520 Fundamentals of Biostatistics 3 cr.** Offered Autumn. This course is designed for graduate students and practitioners in public health, biomedical sciences, and related fields. The course introduces basic vocabulary, concepts, and methods of biostatistics. The goals is to provide an introduction to how biostatistics works. Topics will include descriptive statistics, probability, random variables, probability distributions, statistical inference, chi-square analysis, linear regression, and correlation.

**G 530 Administration and Management in the U.S. Health Care System 3 cr.** Offered autumn. The U.S. healthcare system including the rural system. Organization, management, evaluation, and finance.

**G 535 Health Policy 3 cr.** Offered autumn. The evolution and intersection of international, federal, state, and local public health policy.

**G 540 Social and Behavioral Sciences in Public Health 3 cr.** Offered spring. Behavioral and social factors relevant to the identification and solution of public health problems, principles of health behavior change, applications, and assessment of interventions.

**G 550 Program Evaluation and Research Methods 3 cr.** Offered summer. Prereq., PUBH 510 or equiv. and consent of instr. Covers purpose statements, standards, study designs, sampling, measurement, methods for data collection and analysis, interpretation, and report preparation. Models of evaluation described, and similarities and differences between research and evaluation methods explored.

**G 560 Environmental and Rural Health 3 cr.** Offered spring. Relationship of people to their physical environment, how this relationship impacts health, and efforts to minimize negative health effects.

**G 570 Ethical Issues in Public Health 3 cr.** Offered summer even-numbered years. Focus on the values and moral issues that underlie U.S. public health policies. Course examines ethical decision making in areas such as policy development, research, environmental health, occupational health, resource allocation, and genetics.

**G 580 Rural Health Issues in a Global Context 3 cr.** Offered summer. Prereq., 15 core credits and consent of instr. Analysis of public-health themes. Focus on rural concerns and transnational influences. Includes human rights, health equity, mobile and vulnerable populations, and transnational competence.

**G 591 Practicum 3 cr.** Offered autumn and spring. Prereq., admission into the M.P.H. program and consent of instructor. Semester long, supervised graduate practicum in a health science setting, followed by an oral defense.

**G 593 Professional Portfolio 3 cr.** Offered autumn and spring. Prereq., admission to the M.P.H. program and consent of instructor. Integrates the student's practice experience and knowledge gained through course work, practicum, and possibly professional papers and research with the goals and learning objectives of the M.P.H. program into a portfolio. Students will present and defend their portfolio to illustrate their growth as a professional public health practitioner at the end of their M.P.H. program

**G 595 Special Topics Variable cr. (R-12)** Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics. Previous topics have included Global Health and Epidemiology of Infectious Disease.

**G 596 Independent Study Variable cr. (R-6)** Offered autumn and spring. Prereq., admission to the M.P.H., program and consent of instructor. Supervised readings, research, or public health practice.

**G 597 Research 3 cr. (R-6)** Offered autumn and spring. Prereq., admission to the M.P.H. program and consent of instructor. With the guidance of their faculty advisor, students will develop a written proposal specific to the goals of their research project, and carry out the project.

**G 599 Professional Paper 3 cr.** Offered autumn and spring. Prereq., admission to the M.P.H. program and consent of instructor. Students will write and submit an original research paper to a peer-reviewed public health or medical journal. Students may also fulfill the professional paper requirement by presenting a conference paper or conference poster to a local, regional, or national meeting.

## **Faculty**

### **Public Health Core**

#### **Professors**

- Amanda L. Golbeck, Ph.D., University of California at Berkeley, 1983 (Biostatistics); M.A., University of California at Berkeley, 1979 (Statistics); M.A., University of California at Berkeley, 1977 (Anthropology)
- Craig Molgaard, Ph.D., University of California at Berkeley, 1979 (Anthropology/Health and Medical Sciences); M.P.H. University of California at Berkeley, 1982 (Epidemiology); M.A., University of California at Berkeley, 1976 (Anthropology) (Chair)

#### **Associate Professors**

- Kari Harris, Ph.D., The University of Kansas, 1998 (Behavioral Psychology); M.P.H., The University of Kansas School of Medicine, 1997; M.S., Central Washington University, 1992 (Organizational Development)

### **MPH Program Faculty**

#### **Professors**

- Peter Koehn, Ph.D., University of Colorado, 1973 (Political Science)
- K. Ann Sondag, Ph.D., Southern Illinois, Carbondale, 1988 (Health and Human Performance)
- Willard O. Granath, Ph.D., Wake Forest University, 1982 (Biological Sciences)
- Janet L. Finn, Ph.D., University of Michigan, 1995 (Social Work and Anthropology)
- Tom Seekins, Ph.D. University of Kansas, 1983 (Department of Psychology and the Rural Institute)

#### **Associate Professors**

- Jean T. Carter, Ph.D., The University of Arizona, 1997; Pharm.D., The University of Arizona, 1993 (Pharmacy Practice)
- Kimber Haddix McKay, Ph.D., University of California at Davis, 1998 (Anthropology)
- Elizabeth Putnam, Ph.D., University of Texas-Houston, 1989 (Biomedical and Pharmaceutical Sciences)
- Gilbert Quintero, Ph.D., University of Arizona, 1998 (Anthropology)

#### **Assistant Professors**

- Duncan Campbell, Ph.D., Washington State University, 2003 (Psychology)
- Bryan Cochran, Ph.D., University of Washington, 2003 (Psychology)
- Curtis Noonan, Ph.D., Colorado State University, 2000 (Biomedical and Pharmaceutical Sciences and Pharmacy Practice)
- Robin Saha, Ph.D., University of Michigan, 2002 (Environmental Studies)

#### **Research Associate Professors**

- Donna Bainbridge, Ph.D., Boston University, 1990 (Rural Institute)
- Ann Cook, Ph.D., The University of Montana, 2001 (Research, Psychology)
- Kathleen Humphries, Ph.D., The University of California at Davis, 1995 (Rural Institute)

#### **Research Assistant Professors**

- Meg Ann Traci, Ph.D., University of Montana, 2000 (Rural Institute)
- Tony Ward, Ph.D., University of Montana, 2001 (Biomedical and Pharmaceutical Sciences)
- Lawrence L. White, M.H.A., St. Louis University, 1970 (Health Administration, School of Public and Community Health Sciences)

#### **Project and Research Directors**

- Rosemary Hughes, Ph.D., University of Houston, 1989 (Rural Institute)
- Craig H. Ravesloot, Ph.D., University of Montana, 1995 (Rural Institute)

#### **School of Public and Community Health Sciences Faculty Affiliates**

- Elizabeth Ciemins, Ph.D., University of California at Berkeley, 2003; M.P.H., University of California at Los Angeles, 1994 (Research Director, Center for Clinical Translation Research, Billings Clinic)
- Lawrence Edward Firsch, M.D., Harvard Medical School, 1971; M.P.H. University of Washington, 1995 (Associate Professor, Northeastern Ohio University College of Medicine and Pharmacy; Executive Medical Director for Patient Safety and Quality, Vancouver Island Health Authority, British Columbia, Canada)
- Suzanne Reid Hawley, Ph.D., Loma Linda University, 2002; M.P.H., Loma Linda University, 1999 (Assistant Professor) and MPH Program Director, University of Kansas School of Medicine-Wichita, Department of Preventive Medicine and Public Health
- Steven D. Helgerson, M.D., University of Washington School of Medicine, 1973; M.P.H., University of Washington School of Public

- Health and Community Medicine (State Medical Officer, Montana Department of Health and Human Services)
- Martha Katz, M.P.A., Lyndon B. Johnson School of Public Affairs, University of Texas at Austin, 1976 (Director of Health Policy, Healthcare Georgia Foundation, Adjunct Associate Professor, Georgia State University Institute of Public Health)
- Marshall W. Krueter, Ph.D., University of Utah, 1971 (Retired Professor, Institute of Public Health, College of Health and Human Sciences, Georgia State University)
- Cindy Laukes, M.A., University of Iowa, 1990 (Clinical Research Director, Montana Neuroscience Institute, Clinical Research Manager, Montana Cancer Institute)
- Lolem Ngong, M.P.H., University of Kansas School of Medicine-Wichita, 2001 (WESTAT Contractor, Centers for Disease Control and Prevention, Division of Tuberculosis Elimination)
- Angelia Paschal, Ph.D., Kent State University, 2003; M.Ed., University of Mississippi, 1992 (Assistant Professor, University of Kansas School of Medicine-Wichita, Department of Preventive Medicine and Public Health)
- Lisa Pascopella, Ph.D., Albert Einstein College of Medicine, 1993; M.P.H., University of California at Berkeley, 1999 (Research Administrator and Faculty, FJ Curry national Tuberculosis Center, University of California-San Francisco)

## Skaggs School of Pharmacy

- [Admission](#)
- [Pre-Pharmacy Program](#)
- [Special Degree Requirements](#)
- [Courses](#)
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Pharmacy is the study of the biological, chemical, and physical characteristics of medicinal substances and the utilization of these substances in the prevention, treatment, and control of illness and disease. It also encompasses a study of the systems of delivering health care and the function of the professional pharmacist within these systems.

The Skaggs School of Pharmacy was established in 1907 at Montana State College and was transferred to the University in 1913. The pharmacy program consists of two departments, Pharmacy Practice and Biomedical and Pharmaceutical Sciences.

The Skaggs School of Pharmacy is a member of the American Association of Colleges of Pharmacy. The entry-level doctor of pharmacy program is fully accredited by the Accreditation Council for Pharmacy Education, 20 North Clark Street, Suite 2500, Chicago IL 60602-5109, telephone (312) 664-3575, (800) 533-3606; FAX (312) 664-4652.

The curriculum offered by the Skaggs School of Pharmacy consists of a six year program leading to the entry-level Pharm.D. degree. The first two years, or pre-professional portion of the curriculum, are spent in studies of the basic biological and physical sciences, and in course work necessary to satisfy the University general education requirements. During the first three years of the professional program, students devote their time to the study of the biomedical and pharmaceutical sciences and pharmacy practice. Areas of study include biochemistry, microbiology, medicinal chemistry, pharmaceuticals, pharmacology, social administrative pharmacy, and therapeutics. The final professional year is entirely experiential.

A program of selected electives allows the student to obtain further educational experience in specialized areas of pharmaceutical knowledge. Students in the professional program may choose elective courses in specific areas of interest which include community pharmacy practice, management, research and teaching, or hospital and institutional pharmacy practice. All students must confer with assigned advisors prior to each registration period and receive approval of proposed courses.

In addition to their formal educational program, students, to become registered pharmacists, must complete practical experience or internship under the direction of a registered pharmacist and pass an examination given by the State Board of Pharmacy.

Career opportunities exist in the fields of community pharmacy, institutional pharmacy, federal or state government service, public health agencies, and with the pharmaceutical industry in sales positions or in manufacturing. Those with advanced degrees are in demand for research positions and in pharmaceutical education.

**High School Preparation:** In addition to the general University admission requirements, algebra, trigonometry, biology, chemistry, physics and a course in computers are recommended.

### Admission

The general requirements for admission to the University are listed separately in this catalog.

### Pre-Pharmacy Program

The pre-pharmacy curriculum, which requires a minimum of two years of full-time study, may be taken at any accredited college or university.

Students at The University of Montana-Missoula may enter the pre-pharmacy program during any semester. It is recommended that students considering pharmacy as a major declare a pre-pharmacy major as early as possible in order to receive appropriate advising. Upon

designating pre-pharmacy as a major, students will be assigned an advisor within the pharmacy program.

### **Professional Pharmacy Program**

Students must apply for admission to the professional program. Class size in the professional pharmacy program is restricted and admission to the program is competitive. The admission process is designed to admit the best overall class into professional study. Completed applications are evaluated by the Skaggs School of Pharmacy Admissions Committee. Acceptances are made by the pharmacy faculty and the dean based on the recommendations of the committee.

Since very few elective credits are available in the professional pharmacy curriculum, students will be expected to have completed all General Education requirements except for the upper-division writing and ethics requirements prior to entering the professional curriculum. Students must complete all General Education requirements before entering pharmacy practice experience rotations during the final year of the program. Applicants will be screened based on academic record (both overall and in the required pre-pharmacy course work) and Pharmacy College Admission Test scores (refer to [www.pcatweb.info](http://www.pcatweb.info) for test dates). To be eligible for admission, students must have a minimum grade point average of 2.5 on a 4 point scale, both overall and in required pre-professional courses. **Students must earn grades of at least a C (not C-) in all required pre-pharmacy courses.** For the past several years there have been more than four applicants for each opening, and the grade point average of the entering class has been about 3.5. In addition, applicants must present proof of having completed at least 60 hours of volunteer or paid service in a pharmacy, other health care, or social field, and an evaluation form filled out by someone involved with the applicant in such an experience. A personal interview is also required.

As a state supported institution, the Skaggs School of Pharmacy gives all applicants from the Montana University System equal consideration for admission into the professional pharmacy program. There is no restriction on admission of out-of-state students; however, Montana residents are given priority among students with equal qualifications. Students will be notified of their admission status in writing. In the past, student with only international coursework have not been admitted to the professional pharmacy program.

The curriculum of the professional pharmacy program is sequential. Therefore, students may enter the program in the autumn semester only. Application forms for admission to the professional curriculum may be obtained from the website of the College of Health Professions and Biomedical Sciences ([www.health.umt.edu](http://www.health.umt.edu)). Applications must be post marked by February 15 preceding the autumn semester of the year for which admission is requested.

An application fee must be submitted with the application. Admission for one academic year cannot be deferred to another academic year. Official transcripts of all academic courses taken must be forwarded directly to the Skaggs School of Pharmacy.

The professional pharmacy curriculum must be taken in residence at the University. Students transferring from other accredited schools of pharmacy may be admitted with advanced standing, determined on the basis of credits accepted, provided they are in good academic standing. Transfer credit for required professional courses taken at other institutions is accepted only for those courses which are deemed equivalent and in which a letter grade of C (2.00) or better is obtained.

### **Academic Progression**

The general University academic standing requirements are listed separately in this catalog. See index.

Students in the professional pharmacy curriculum must maintain cumulative, professional, and pharmacy grade point averages of 2.0 or higher. The professional grade point average consists of all required course work in the professional curriculum. The pharmacy grade point average consists of all courses with a pharmacy (BMED or PHAR) prefix.

Students enrolled in the professional pharmacy program must maintain satisfactory academic progress. **Students must earn grades of at least C- in all required courses in the professional pharmacy curriculum.** Students in the professional program who have a pharmacy or professional grade point average of less than 2.0 or who receive a grade of D or F in any required course in the professional curriculum will be placed on academic probation. A student must petition to continue in the professional pharmacy program if he or she is on probation. A student will be dismissed from the professional pharmacy program if he or she is on probation for a total of three terms, not necessarily consecutive, subject to review by the dean. A student will be removed from probation when a grade point average of 2.0 has been achieved and all grades in required professional pharmacy courses are C- or better.

Students who have failed ten or more credits of required professional course work or who fail to progress in the expected manner for two consecutive years may be dismissed from the professional pharmacy program, subject to review by the Academic Standards Committee and the dean.

Students dismissed from the program for substandard performance will not be readmitted, except in cases where substantiation is made to the faculty, by written petition, that the substandard performance was the result of circumstances that no longer exist, or that the student has demonstrated the capability and desire to perform satisfactory work since his or her dismissal from the program.

Students leaving the program on their own volition are guaranteed readmission if they are in good academic standing and exit by interview with the assistant dean for student affairs. Those students leaving the program on their own volition and not in good standing must reapply for admission.

The professional pharmacy curriculum consists of an integrated sequence of required courses which is designed to be completed in four consecutive years. With appropriate justification, part-time study in the professional pharmacy program may be allowed. Students desiring



to be enrolled in part-time study must make their request by petition to the Academic Standards Committee. Because the curriculum is revised periodically, students who take longer than the normal number of years to complete the professional program will be required to complete curricular changes applicable to the class in which they graduate. Because the Pharmacy program is academically intense, employment beyond the minimal, part-time work is not recommended.

## Special Degree Requirements

Refer to graduation requirements listed previously in the catalog. See index.

Degree candidates must:

1. Meet the general University requirements for graduation.
2. Earn a grade point average of 2.0 or higher in each of the following areas:
  1. all courses attempted at The University of Montana-Missoula (cumulative GPA).
  2. all courses which carry a pharmacy (BMED or PHAR) prefix (pharmacy GPA).
  3. all required courses in the professional pharmacy curriculum (professional GPA).
3. Required pharmacy course work must be completed with a grade of C- or better.
4. Complete at least six full academic years, including pre-pharmacy instruction, and a minimum of eight semesters of professional instruction as a full-time student registered for a minimum of twelve credits per semester.
5. Complete not less than 200 credits of course work.

## Licensure in Montana

An applicant for licensure as a registered pharmacist in Montana must pass national examinations as required by the Montana State Board of Pharmacy. To qualify for the examinations, the applicant must be of good moral character and a graduate of an accredited school of pharmacy; however, an applicant will not receive a license until an internship is completed.

## Internship Regulations

1. The internship requirement for licensure as a registered pharmacist in Montana is regulated by the Montana State Board of Pharmacy. Students must be registered with the Board of Pharmacy as a pharmacy intern in order to accrue internship hours.
2. Only those students who have completed the first year of the professional pharmacy curriculum may begin their internship.
3. The internship requirement consists of 1,500 hours of experience in an approved pharmacy setting. The student also may acquire hours concurrently with school attendance in courses, clinical pharmacy programs, or demonstration projects which have been approved by the Board of Pharmacy.
4. Many courses and programs currently offered by the School of Pharmacy are approved and applicable toward fulfilling the internship requirement.
5. Students will receive credit for internship time and/or courses taken if such experience is certified by the preceptor and/or instructor and approved by the Board of Pharmacy.

## Pre-Pharmacy Curriculum

The courses shown here must be completed before entering the professional pharmacy program. The sequence of courses is illustrative and, if proper prerequisites are satisfied, the student may alter the order in which the courses are taken.

In addition, applicants to the professional pharmacy program must present proof of having completed at least 60 hours of volunteer or paid service in a pharmacy, other health care, or social field, and one letter of evaluation from someone involved with the applicant in such an experience. The Pharmacy College Admission Test (PCAT) must be taken during the second pre-pharmacy year.

<b>Pre-Pharmacy First Year</b>		<b>A</b>	<b>S</b>
CHMY 141N, 143N (CHEM 161N, 162N) College Chemistry I, II	5	5	
M 162 (MATH 150) Applied Calculus (prereq. M 151 (MATH 121) or appropriate placement score)	4	-	
ECNS 201S (ECON 111S) Principles of Microeconomics or ECNS 202S (ECON 112S) Principles of Macroeconomics	-	3	
WRIT 101 (ENEX 101) English Composition	3	-	
Social science elective chosen from: PSYX 100S Introduction to Psychology or SOCI 101S (SOC 110S) Introduction to Sociology	-	3	
*Electives and General Education	4	5	
<b>Total</b>		<b>16</b>	<b>16</b>
<b>Pre-Pharmacy Second Year</b>		<b>A</b>	<b>S</b>
CHMY 221, 222 Organic Chemistry I, Organic Chemistry I Lab	3	3	
CHMY 223 Organic Chemistry II	2	-	
BIOL 221 Cell and Molecular Biology (prereq., BIOL 110N or equiv.)	4	-	

STAT 216 (MATH 241) Statistics or PSYX 222 (PSYC 220) Psychological Statistics or SOCI 202 Social Statistics (prereq., M 162 (MATH 150) or M 115 (MATH 117)	- 4
PHYS 111N-113N Fundamental of Physics I	- 5
Communications elective chosen from: COMM 111A Introduction to Public Speaking or DRAM 111A Acting for Nonmajors	3 -
*Electives and General Education	4 4
Total	16 16

\*Students must complete the University's General Education requirements. Due to the limitation of elective credits in the professional pharmacy curriculum, students are advised to complete the lower-division General Education requirement during the pre-pharmacy curriculum.

### Professional Pharmacy Curriculum

Students must apply for admission to the professional program. For requirements see the section on Admission. Students enrolled in the professional pharmacy curriculum are assessed a supplemental fee. This fee does not apply to pre-pharmacy students. Refer to the fees section of this catalog for details. Students must demonstrate proficiency in pharmaceutical calculation by successfully completing a competency assessment prior to entering the second professional year. Students, except those exempt, must complete the University Upper-Division Writing Proficiency Assessment prior to entering the second professional year.

The Upper-division Writing Requirement must be met by successfully completing PHAR 550 or an upper-division writing course from the approved list in the Academic Policies and Procedures section of this catalog. See index.

<b>First Professional Year</b>	<b>A</b>	<b>S</b>
BIOC 380 Elementary Biochemistry	4	-
BMED 328 Antimicrobial Agents	-	3
BMED 331 Pharmaceutics	-	4
BMED 341, 342 Physiological Systems I, II	4	4
BMED 361-362 Pharmaceutical Sciences Lab I	1	1
MICB 302 Medical Microbiology	3	-
PHAR 309 Pharmacy Practice I	3	-
PHAR 310 Pharmacy Practice II	-	2
PHAR 363 Pharmaceutical Care Lab I	-	1
PHAR 371-372 Integrated Studies	1	1
Total	16	16
<b>Second Professional Year Autumn/Spring Intersession:</b>		
PHAR 480 Community Pharmacy Introductory Experience	-	3
	<b>A</b>	<b>S</b>
BMED 421, 422 Medicinal Chemistry I, II	3	3
BMED 432 Biopharmaceutics/Pharmacokinetics	3	-
BMED 443, 444 Pharmacology and Toxicology	4	4
PHAR 412 Pharmacy Practice III--Social and Behavioral Pharmacy	-	2
PHAR 451, 452 Therapeutics I, II	3	3
PHAR 460 Pharmaceutical Care Lab II	1	-
PHAR 463 Pharmaceutical Care Lab III	-	1
PHAR 471, 472 Integrated Studies	1	1
Electives	1	2
Total	16	16
<b>Third Professional Year Autumn/Spring Intersession:</b>		
PHAR 481 Hospital Pharmacy Introductory Experience	-	3
	<b>A</b>	<b>S</b>
PHAR 505 Pharmacy Practice IV--Pharmaceutical Care	3	-

PHAR 506 Pharmacy Practice V–Advanced Pharmaceutical Care	- 3
PHAR 513 Pharmacoeconomics and Outcomes Research	- 3
PHAR 514E Pharmacy Ethics	- 3
PHAR 550 Drug Literature Evaluation	3 -
PHAR 553, 554 Therapeutics III and IV	4 4
PHAR 557 Public Health in Pharmacy	2 -
PHAR 560 Pharmaceutical care Lab IV	1 -
PHAR 563 Pharmaceutical Care Lab V	- 1
PHAR 571, 572 Integrated Studies	1 1
PHAR 578 Portfolio Assessment & APFE Orientation	- 1
Total	14 16
<b>Fourth Professional Year</b>	<b>A S</b>
PHAR 579 Community Pharmacy Advanced Pharmacy Practice Experience	4 -
PHAR 580 Hospital Pharmacy advanced Pharmacy Practice Experience	- 4
PHAR 581 Inpatient Advanced Pharmacy Practice Experience	4 -
PHAR 582 Ambulatory Care Advanced Pharmacy Practice Experience	- 8
PHAR Elective Pharmacy Practice Experience	8 8
Total	16 20

Required credits: 200

## Department of Pharmacy Practice

**Michael P. Rivey, Chair**

The Department of Pharmacy Practice provides academic course work for the Doctor of Pharmacy and Masters degrees, conducts research in the broad area of health care, and provides service to the profession of pharmacy and other health care disciplines.

### Courses

U = for undergraduate credit only, UG = for undergraduate or graduate credit, G = for graduate credit. R after the credit indicates the course may be repeated for credit to the maximum indicated after the R. Credits beyond this maximum do not count toward a degree.

#### Pharmacy (PHAR)

**U 110N Use and Abuse of Drugs 3 cr.** Offered autumn and spring. Drug dependence and abuse.

**U 195 Special Topics Variable cr.** (R-16) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 309 Pharmacy Practice I: Introduction to Pharmacy 3 cr.** Offered autumn. Prereq., M 162 (MATH 150) and admission to the professional pharmacy program. An introduction to the prescription and pharmaceutical calculations and to the role of the pharmacist in systems involved in health care delivery.

**U 310 Pharmacy Practice II: Law and Dispensing 2 cr.** Offered spring. Prereq., PHAR 309. Federal and state laws and regulations pertaining to pharmacy practice. Introductory dispensing laboratory.

**U 320 American Indian Health Issues 2 cr.** Offered spring. Same as HS 320. An overview of the health issues, health care delivery and payment that affect American Indians.

**UG 324 Medicinal Plants 2-3 cr.** Offered autumn. Same as BMED 324 and HS 324. Plants and other natural substances which nourish, heal, injure, or alter the conscious mind.

**U 363 Pharmaceutical Care Lab I 1 cr.** Coreq. PHAR 310. Practice in technical and legal aspects of drug dispensing, prescription and OTC drug counseling, and sterile intravenous (IV) admixture.

**U 371 Integrated Studies I 1 cr.** Prereq., first professional year standing in pharmacy. Small group conferences designed to develop

professional skills while integrating material from other pharmacy courses.

**U 372 Integrated Studies II 1 cr.** Prereq., PHAR 371. Continuation of 371.

**U 380 Pharmacy Practicum 1-2 cr.** (R-3) Offered autumn and spring. Prereq., PHAR 309. Supervised professional experience in the Student Health Service Pharmacy.

**U 395 Special Topics Variable cr.** (R-9) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 397 Research 1-3 cr.** (R-6) Offered autumn and spring. Prereq., consent of instr. Individual participation in library or laboratory research.

**U 412 Pharmacy Practice III–Social and Behavioral Pharmacy 2 cr.** Offered spring. Prereq., second professional year standing and a course in communication. The social, economic, legal, ethical, and psychological factors involved in professional and patient relationships of pharmacists.

**UG 451 Therapeutics I 3 cr.** Offered autumn. Prereq., second professional year standing; coreq., PHAR 471; prereq. or coreq., BMED 328, 421 and 443. Pharmacotherapeutics of common disease states emphasizing pathophysiology and the selection, monitoring, and individualization of drug therapy. Applies the basic pharmaceutical sciences to patient care.

**UG 452 Therapeutics II 3 cr.** Offered spring. Prereq., PHAR 451; coreq., PHAR 472; prereq. or coreq., BMED 422, 432 and 444. Pharmacotherapeutics of common disease states emphasizing pathophysiology and the selection, monitoring, and individualization of drug therapy. Applies the basic pharmaceutical sciences to patient care.

**U 460 Pharmaceutical Care Lab II 1 cr.** Offered autumn. Prereq., second professional year standing, PHAR 310. Introduction to parenteral practice application, applied patient interview assessment, and communication skills for practice.

**U 463 Pharmaceutical Care Lab III 1 cr.** Coreq. PHAR 412. Practice counseling and patient-care skills with emphasis on non-prescription drugs and devices. Includes individual in-service presentations.

**U 471 Integrated Studies III 1 cr.** Offered autumn. Prereq., second professional year standing in pharmacy. Small group conferences designed to develop professional skills while integrating material from first and second year professional pharmacy courses.

**U 472 Integrated Studies IV 1 cr.** Offered spring. Prereq., PHAR 471. Continuation of 471.

**U 480 Community Pharmacy Introductory Pharmacy Practice Experience 3 cr.** (R-6) Offered every term. Prereq., completion of first professional year. Supervised professional experience in community pharmacy.

**U 481 Hospital Pharmacy Introductory Pharmacy Practice Experience 3 cr.** (R-6) Offered every term. Prereq., completion of first professional year. Supervised professional experience in a hospital pharmacy.

**UG 495 Special Topics Variable cr.** (R-9) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 497 Research 1-3 cr.** (R-6) Offered autumn and spring. Prereq., consent of instr. Individual participation in library or laboratory research.

**U 505 Pharmacy Practice IV–Pharmaceutical Care 3 cr.** Offered autumn. Prereq., third professional year standing in Pharm.D. program. Applications of advanced drug therapy monitoring and disease state management.

**U 506 Pharmacy Practice V–Professional Practice Management 3 cr.** Offered spring. Prereq., PHAR 505. Aspects of dispensing, management, communications, disease state monitoring, and legal issues related to the provision of pharmaceutical care.

**UG 513 Pharmacoeconomics and Outcomes Research 3 cr.** Offered spring. Prereq., third professional year standing or consent of instr. Introduction to assessing the economic, clinical and humanistic outcomes of pharmacotherapy.

**U 514E Case Studies in Pharmacy Ethics 3 cr.** Offered spring. Prereq., third professional year standing or consent of instr. A practical discussion of pharmacy ethics, as it relates to pharmacy practice.

**UG 516 Advanced Pharmacy Administration 2 cr.** Offered intermittently. Prereq., consent of instr. Analysis of the pharmaceutical industry.

**UG 550 Drug Literature Evaluation 3 cr.** Offered autumn. Prereq., third professional year standing in pharmacy. Scientific and statistical evaluation of the drug and medical research literature to formulate solutions for patient-specific pharmacotherapy problems.

**UG 553 Therapeutics III 4 cr.** Offered autumn. Prereq., PHAR 452, 472; prereq. or coreq., PHAR 571. Pharmacotherapeutics of common disease states emphasizing pathophysiology and the selection, monitoring, and individualization of drug therapy. Applies the basic pharmaceutical sciences to patient care.

**UG 554 Therapeutics IV 4 cr.** Offered spring. Prereq., PHAR 553, 571; prereq. or coreq., PHAR 572. Intended for Pharm.D. students. Pharmacotherapeutics of common disease states emphasizing pathophysiology and the selection, monitoring, and individualization of drug therapy. Applies the basic pharmaceutical sciences to patient care.

**UG 556 Psychopharmacotherapeutics 2 cr.** Offered autumn. Prereq., PHAR 452 or consent of instr. A discussion of the more common childhood and adult psychiatric disorders with emphasis on a pharmacologic approach to their treatment.

**UG 557 Public Health in Pharmacy 2 cr.** Offered autumn. Prereq., PHAR 452, 472. Discussion of the roles and responsibilities of pharmacists in public health and the role of drugs in public health programs.

**U 558 Physical Assessment 2 cr.** Offered spring. Coreq., PHAR 554. Basic physical assessment skills for the pharmacist's proper interpretation of patient response to drug therapy.

**U 560 Pharmaceutical Care Lab IV 1 cr.** Coreq PHAR 505. Practice in professional communication and pharmaceutical care interventions and recommendations.

**U 563 Pharmaceutical Care Lab V 1 cr.** Coreq., PHAR 506. Practice in professional communication and pharmaceutical care interventions and recommendations.

**UG 571 Integrated Studies V 1 cr.** Offered autumn. Prereq., third professional year standing in Pharm.D. program. Small group conferences designed to develop the professional skills needed to practice pharmaceutical care while integrating material from the professional pharmacy curriculum.

**U 572 Integrated Studies VI 1 cr.** Offered spring. Prereq., third professional year standing in Pharm.D. program. Small group conferences designed to develop professional skills while integrating material from other pharmacy courses.

**U 573 Institutional Pharmacy 3 cr.** Offered autumn. Prereq., PHAR 309 and BMED 331. The pharmacist's role and activities in drug distribution and control in hospitals and related institutions with an emphasis on the preparation and administration of sterile products.

**U 578 Portfolio Assessment and APPE Orientation 1 cr.** Offered spring. Prereq., final semester in didactic PHARM D curriculum. Preparation and assessment of the student portfolio and orientation for the final experiential year of the professional pharmacy program.

**U 579 Community Pharmacy Advanced Pharmacy Practice Experience Variable cr.** (R-12) Offered every term. Prereq., completion of didactic courses in the Pharm. D. program. Supervised professional experience in the patient care functions of the pharmacist in the community pharmacy setting.

**U 580 Hospital Pharmacy Advanced Pharmacy Practice Experience Variable cr.** (R-12) Offered every term. Prereq. Completion of didactic courses in the Pharm.D. program. Supervised professional experience in the patient care functions of the pharmacist in the hospital pharmacy setting.

**U 581 Inpatient Advanced Pharmacy Practice Experience Variable cr.** (R-12) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in the clinical functions of the pharmacist in the inpatient hospital setting.

**U 582 Ambulatory Care Advanced Pharmacy Practice Experience Variable cr.** (R-16) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in the clinical functions of the pharmacist in the ambulatory care setting.

**U 583 Drug Information Advanced Pharmacy Practice Experience 4 cr.** (R-8) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in the provision of drug information by the pharmacist.

**U 584 Specialized Services Advanced Pharmacy Practice Experience 4 cr.** (R-8) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in specialized practice settings, such as home infusion, compounding, and nuclear pharmacies..

**U 585 Geriatric Advanced Pharmacy Practice Experience 4 cr.** (R-8) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience with geriatric patients in the long term care and/or other pharmacy setting.

**U 586 Clinical Specialty Advanced Pharmacy Practice Experience 4 cr.** (R-16) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in the clinical functions of the pharmacist in specialty settings or with specialized groups of patients.

**U 587 Administrative Advanced Pharmacy Practice Experience 4 cr.** (R-8) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in the administrative aspects of providing pharmaceutical care.

**U 588 Research Advanced Pharmacy Practice Experience 4 cr.** (R-8) Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in a research setting.

**U 589 Education Advanced Pharmacy Practice Experience 4 cr.** Offered every term. Prereq., completion of didactic courses in the Pharm.D. program. Supervised professional experience in teaching in a pharmacy curriculum.

**UG 593 Current Research Literature 1 cr.** (R-6) Offered autumn and spring. Readings and discussion of current research literature.

**UG 594 Seminar 1 cr.** (R-6) Offered autumn and spring. Prereq., senior or graduate standing.

**UG 595 Special Topics Variable cr.** (R-9) Offered intermittently. Prereq., senior or graduate standing. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**UG 596 Independent Study Variable cr.** (R-9) Offered every term.

**UG 597 Research Variable cr.** (R-6 for undergraduates; R-10 for graduates) Offered every term. Prereq., senior or graduate standing. Individual participation in library or laboratory research.

**G 599 Thesis Variable cr.** (R-10) Offered every term.

**G 603 Professional Practice IV–Pharmaceutical Care 4 cr.** Offered autumn. Prereq., third professional year standing in Pharm.D. program and acceptance into M.B.A. program. Aspects of dispensing, management, communications, disease state monitoring, and legal issues related to the provision of pharmaceutical care.

**G 604 Professional Practice V–Advanced Professional Practice 4 cr.** Offered spring. Prereq., PHAR 603. Applications of advanced drug therapy monitoring and disease state.

## Faculty

### Professors

- Douglas R. Allington, Pharm.D., University of South Carolina, 1988
- Donna G. Beall, Pharm.D., University of Florida, 1984
- Gayle A. Hudgins, Pharm.D., Duquesne University, 1976
- William J. Docktor, Pharm.D., University of Michigan, 1977
- David S. Forbes, Ph.D., University of Wisconsin, 1973 (Dean)
- Sarah Johnston Miller, Pharm.D., Mercer University, 1985
- Lori J. Morin, Pharm D., M.B.A., The University of Montana, 1981 (Assistant Dean for Student Affairs)
- Michael P. Rivey, M.S., University of Iowa, 1982 (Chair)

### Associate Professors

- Sherrill Brown, Pharm.D., University of Missouri, Kansas City, 2003
- Jean T. Carter, Ph.D., University of Arizona, 1997
- Vincent J. Colucci, Pharm.D., Idaho State University, 1995
- Lawrence A. Dent, Pharm.D., Idaho State University, 1993

### Assistant Professors

- Katy Hale, Pharm.D., University of Washington, 2004
- Kendra Procacci, Pharm.D., University of Wyoming, 2004

### Instructors

- Genine Thormahlen, Pharm.D., The University of Montana, 2004
- Lisa Wrobel, Pharm.D., The University of Montana, 2003

### Adjunct Assistant Professors

- Lisa C. Barnes, M.B.A., The University of Montana, 1994

## Department of Biomedical and Pharmaceutical Sciences

### Ricahrd J. Bridges, Chair

The Department of Biomedical and Pharmaceutical Sciences offers a curriculum in support of the Doctor of Pharmacy (Pharm.D.) degree and graduate programs in the biomedical and pharmaceutical sciences. Degree programs include the M.S. in Neuroscience, Pharmaceutical Sciences, and Toxicology; and the Ph.D. in Neuroscience, Biomedical Sciences, and Toxicology. These programs provide education and training in pharmacology, toxicology, neurobiology, neurochemistry, medicinal chemistry, and molecular genetics. Program graduates are well prepared for careers in academia, government and industry.

## Courses

U = for undergraduate credit only, UG = for undergraduate or graduate credit, G = for graduate credit. R after the credit indicates the course may be repeated for credit to the maximum indicated after the R. Credits beyond this maximum do not count toward a degree.

### Biomedical and Pharmaceutical Sciences (BMED)

**U 145N Introduction to Cancer Biology 3 cr.** Introduction to basic concepts in cancer biology, treatment, and prevention. Includes discussions of the history of cancer, nomenclature, prevention, cellular and molecular mechanisms, pathology, treatment, and familial cancers.

**U 195 Special Topics Variable cr.** (R-16) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**UG 324 Medicinal Plants 2-3 cr.** Offered autumn. Plants and other natural substances which nourish, heal, injure, or alter the conscious mind.

**U 328 Antimicrobial Agents 3 cr.** Offered spring. Prereq., BIOC 380, MICB 302. Chemical characteristics, biochemical mechanisms, and pharmacological properties of drugs used in treating infections caused by microorganisms.

**U 331 Pharmaceutics 4 cr.** Offered spring. Prereq., CHEM 222, first professional year standing. Physical pharmacy and dosage forms.

**U 341 Physiological Systems I 4 cr.** Offered autumn. Prereq., CHEM 222, PHYS 121N, BIOL 221. Principles of anatomy, normal and abnormal physiology.

**U 342 Physiological Systems II 4 cr.** Offered spring. Prereq., BMED 341. Continuation of 341.

**U 347 Introduction to Neuroscience 3 cr.** Offered autumn. Prereq., introductory chemistry and biology. Same as BIOL 347. The molecular and cellular physiology of the human nervous system. Topics range from the basis of electrical and chemical signaling in neurons to the organization of the nervous system and its functions in generating behavior.

**U 361 Pharmaceutical Sciences Laboratory 1 cr.** Offered autumn. Coreq., PHAR 309, BMED 341. Laboratory experience in the pharmaceutical sciences.

**U 362 Pharmaceutical Sciences Laboratory 1 cr.** Offered spring. Prereq., BMED 361; coreq., BMED 331 and 342. Continuation of 361.

**U 395 Special Topics Variable cr.** (R-9) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 397 Research 1-3 cr.** (R-6) Offered autumn and spring. Prereq., consent of instr. Individual participation in library or laboratory research.

**U 401 Use of Animals in Research 2 cr.** Offered intermittently. Prereq., consent of faculty supervisor. An introductory course to the care and use of laboratory animals in research. Includes lecture and some hands-on instruction with inanimate models and live animals.

**UG 421 Medicinal Chemistry I 3 cr.** Offered autumn. Prereq., BIOC 380. The chemistry of organic compounds used medicinally and their biochemical mechanisms of action.

**UG 422 Medicinal Chemistry II 3 cr.** Offered spring. Prereq., BMED 421. Continuation of 421.

**U 430 Pharmacogenetics 2 cr.** Offered alternate years. Prereq., BIOC 380, BMED 421, 432. The genetic basis of differential drug activity.

**UG 432 Biopharmaceutics and Pharmacokinetics 3 cr.** Offered spring. Prereq., BMED 331 and pharmaceutical calculation proficiency requirement, or consent of instr. Drug absorption, distribution and elimination.

**UG 443 Pharmacology and Toxicology 4 cr.** Offered autumn. Prereq., second professional year standing. Basic principles of pharmacology, toxicology and therapeutics.

**UG 444 Pharmacology and Toxicology 4 cr.** Offered spring. Prereq., BMED 443. Continuation of 443.

**UG 495 Special Topics Variable cr.** (R-9) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**U 497 Research 1-3 cr.** (R-6) Offered autumn and spring. Prereq., consent of instr. Individual participation in library or laboratory research.

**G 501 Care and use of Laboratory Animals in Research 2 cr.** Offered intermittently. Prereq., consent of faculty supervisor. An introductory course to the care and use of laboratory animals in research. Includes lecture and some hands-on instruction.

**G 545 Research Laboratory Rotations 2-3 cr.** (R-6) Offered autumn and spring. Prereq., BMED 443 or graduate standing. Experience in research methods in departmental research laboratories.

**G 581 Research Seminar in Biomedical Science 1 cr.** (R-9) Offered autumn and spring. Oral and written presentations of experimental research results and selected literature topics in biomedical science.

**G 582 Research Seminar in Neuroscience 1 cr.** (R-9) Offered autumn and spring. Oral and written presentations of experimental research results and selected literature topics in neuroscience.

**G 583 Research Seminar in Toxicology 1 cr.** (R-9) Offered autumn and spring. Oral and written presentations of experimental research results and selected literature topics in toxicology.

**G 593 Current Research Literature 1 cr.** (R-6) Offered autumn and spring. Readings and discussion of current research literature.

**G 594 Seminar 1 cr.** (R-6) Offered autumn and spring. Prereq., senior or graduate standing.

**UG 595 Special Topics Variable cr.** (R-9) Offered intermittently. Prereq., senior or graduate standing. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

**G 596 Independent Study Variable cr.** (R-9) Offered every term.

**G 597 Research Variable cr.** (R-10) Offered every term.

**G 599 Thesis Variable cr.** (R-10) Offered every term.

**G 600 Advanced Cellular Biochemistry 4 cr.** Offered every spring. Prereq., BIOC 380 or 481, or consent of instr. Same as BIOC 600. Exploration on a molecular level the regulation of structure, function, and dynamics of eukaryotic cells. Topics include membranes, cytoskeleton, transcription, translation, signal transduction, cell motility, cell proliferation, and programmed cell death.

**G 605 Biomedical Research Ethics 1 cr.** Offered spring. Overview of biomedical research ethics and regulations. Topics include ethics and morality in science, scientific integrity, conflicts of interest, human and animal experimentation, intellectual property, plagiarism.

**G 607 Topics in Epidemiology 1-3 cr.** (R-9) Offered autumn or spring. Prereq., BMED 609 or equiv. Current topics in epidemiology.

**G 609 Biomedical Statistics 3 cr.** Offered autumn. Experimental design and statistical analysis relevant to the biomedical sciences.

**G 610 Neuropharmacology 3 cr.** Offered alternate years. Prereq., BMED 613 or 661 or consent of instr. Focus on current areas of research and research technologies in neuropharmacology. Development of presentations and research grant proposals.

**G 613 Pharmacology I 4 cr.** Offered autumn. Prereq., BIOC 380 or equiv. Fundamentals of pharmacology and drug action.

**G 614 Pharmacology II 4 cr.** Offered spring. Prereq., BMED 613. Fundamentals of pharmacology and drug action. Continuation of BMED 613.

**G 615 Molecular Pharmacology 3 cr.** Offered alternate years. Prereq., BMED 600, 613 or consent of instr. Focus on the molecular world of receptors and their interactions with related cellular components and ultimately with binding ligands, both physiological and pharmaceutical. Major emphasis in pharmacodynamics with some time devoted to related pharmacokinetic parameters.

**G 620 Cardiovascular Pharmacology and Toxicology 3 cr.** Offered alternate years. Prereq., BMED 613 or 641, or consent of instr. Recent advances in pharmacology and toxicology of the cardiovascular system. In-depth study of regulatory mechanisms and the effect of immune response and xenobiotics on cardiovascular function.

**G 621 Drug Design, Development and Discovery with lab 4 cr.** Offered alternate years. Prereq., Organic Chemistry and Biochemistry or consent of instr. Introduction to the main concepts in medicinal chemistry. Laboratory experience in instrumental analysis, interpreting NMR, MS cleavage, and structure elucidation.

**g 622 Drug Pharmacodynamic-Drug Receptor Interactions with lab 4 cr.** Offered alternate years. Organic Chemistry and Biochemistry or consent of instr. Introduction and topical coverage of how drugs form complexes with biological targets to cause an array of responses.

**G 623 Drug Diversity and Target-Oriented Synthesis 3 cr.** Offered alternate years. Organic Chemistry and Biochemistry or consent of instr. Topics in chemogenomics and diversity oriented synthesis will be covered.

**G 625 Drug Synthesis 3 cr.** Offered intermittently. An introduction to the past and current synthetic approaches and total syntheses of biologically active drugs.

**G 626 Research Methods in Biochemical Pharmacology 1- 3 cr.** (R-6) Offered every term. Prereq., consent of instr. Laboratory course intended to familiarize students with the instruments, and expertise of current research techniques in the biomedical sciences.



**G 627 Professional Development 1 cr.** Offered autumn and spring. Prereq., Organic Chemistry and Biochemistry or consent of instr. Developmental training in presentations, writing, reviewing, literature research, teaching, research methods, grant writing, ethics, and business aspects in medicinal chemistry.

**G 630 Pharmacogenetics 3 cr.** Offered alternate years. Prereq., BIOC 380 or 481. The genetic basis of differential drug activity.

**G 632 Advanced Pharmaceutics 1-3 cr.** (R-6) Offered intermittently. Advanced studies of dosage formulations, biopharmaceutics, and pharmacokinetics.

**G 635 Academic Development Seminar 2 cr.** Offered alternate years. Prereq., admission to graduate program. Designed to improve skills in teaching, design and implementation of hypothesis testing, and grant writing with emphasis on the biological and chemical sciences.

**G 637 Topics in Biomedical Science 1-3 cr.** (R-9) Offered autumn or spring. Prereq., BMED 613, or 641, or 661. Current topics in the biomedical sciences.

**G 641 Toxicology I–Principles of Toxicology 3 cr.** Offered autumn. Prereq., BIOC 481 or equiv. Introduction to toxicology. Topics include general principles, risk assessment, organ system toxicology, introduction to carcinogenesis, and genetic toxicology.

**G 642 Toxicology II–Toxic Agents 3 cr.** Offered spring. Prereq., BMED 641. Toxic agents and the diseases caused by those agents. Includes common toxicants in the environment and occupational settings as well as drug induced toxicity.

**G 643 Cellular and Molecular Toxicology 3 cr.** Offered autumn. Prereq., BMED 641. Cellular and molecular mechanisms of toxicity. Includes apoptosis, regulation of cell cycle, genetic toxicology, and signal transduction pathways in toxicity.

**G 644 Immunotoxicology 3 cr.** Offered alternate years. Prereq., MICB 410 or equiv. The impacts of xenobiotic agents on the immune system.

**G 645 Respiratory Toxicology 3 cr.** Offered alternate years. Prereq., BMED 641. The lung and associated immune systems and their response to inhaled immunogenic and toxicological agents.

**G 646 Neurotoxicology 3 cr.** Offered alternate years. Prereq., BMED 641 or 661. Mechanisms of major neurotoxins and neurological disease.

**G 647 Topics in Toxicology 1-3 cr.** (R-9) Offered autumn or spring. Prereq., BMED 613, or 641, or 661. Current topics in toxicology.

**G 657 Topics in Immunology 1-3 cr.** (R-9) Offered autumn or spring. Prereq., MICB 410 or equiv. Current topics in immunology.

**G 661 Neuroscience I 4 cr.** Offered autumn. Prereq., BIOC 380 or equiv. Overview of the structure and function of the nervous system.

**G 662 Neuroscience II 4 cr.** Offered spring. Prereq., BMED 661. Fundamentals of developmental neuroscience, behavioral and cognitive neuroscience, and computational neuroscience.

**G 667 Topics in Neurobiology 1-3 cr.** (R-9) Offered every year. Prereq., BMED 661. Current topics in neuroscience.

**G 697 Research 1-9 cr.** (R-20) Offered every term.

**G 699 Dissertation 1-9 cr.** (R-20) Offered every term.

## Faculty

### Professors

- Howard D. Beall, Ph.D., University of Florida, 1991
- Richard J. Bridges, Ph.D., Cornell University Medical College, 1987 (Chair)
- J. Douglas Coffin, Ph.D., State University of New York Health Sciences Center at Syracuse, 1989
- Vernon R. Grund, Ph.D., University of Minnesota, 1974 (Associate Dean for research and Graduate Education)
- Andrij Holian, Ph.D., Montana State University, 1975 (Director, Center for Environmental Health Sciences)
- Michael Kavanaugh, Ph.D., Oregon Health Sciences University-Portland, 1987 (Director, Center for Structural and Functional Neuroscience)
- Diana I. Lurie, Ph.D., University of Pennsylvania, 1989
- Nicholas Natale, Ph.D., Drexel University, 1978
- Charles M. Thompson, Ph.D., University of California, Riverside, 1982

### Associate Professors

- Fernando Cardozo-Pelaez, Ph.D., University of Southern Florida, 1996
- Lilian Calderon-Garciduenas, M.D., Ph.D., University of North Carolina, 2001