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University of Minnesota Mission Statement

The University of Minnesota, founded in the belief that all people are enriched by understanding, is dedicated to the advancement of learning and the search for truth; to the sharing of this knowledge through education for a diverse community; and to the application of this knowledge to benefit the people of the state, the nation, and the world.

The University’s mission, carried out on multiple campuses and throughout the state, is threefold:

Research and Discovery — Generate and preserve knowledge, understanding, and creativity by conducting high-quality research, scholarship, and artistic activity that benefit students, scholars, and communities across the state, the nation, and the world.

Teaching and Learning — Share that knowledge, understanding, and creativity by providing a broad range of educational programs in a strong and diverse community of learners and teachers, and prepare graduate, professional, and undergraduate students, as well as non-degree-seeking students interested in continuing education and lifelong learning, for active roles in a multiracial and multicultural world.

Outreach and Public Service — Extend, apply, and exchange knowledge between the University and society by applying scholarly expertise to community problems, by helping organizations and individuals respond to their changing environments, and by making the knowledge and resources created and preserved at the University accessible to the citizens of the state, the nation, and the world.

In all of its activities, the University strives to sustain an open exchange of ideas in an environment that embodies the values of academic freedom, responsibility, integrity, and cooperation; that provides an atmosphere of mutual respect, free from racism, sexism, and other forms of prejudice and intolerance; that assists individuals, institutions, and communities in responding to a continuously changing world; that is conscious of and responsive to the needs of the many communities it is committed to serving; that creates and supports partnerships within the University, with other educational systems and institutions, and with communities to achieve common goals; and that inspires, sets high expectations for, and empowers the individuals within its community.

College of Pharmacy Mission

The College of Pharmacy educates pharmacy practitioners to meet the pharmaceutical care needs of the people of Minnesota and the rest of society. The college is committed to improving human health through the development of new drugs and drug delivery systems, optimization of drug use, and improvement of pharmaceutical services. It is committed to advancing pharmaceutical technology to strengthen Minnesota’s economy.

Overview

The College of Pharmacy at the University of Minnesota is one of the outstanding pharmacy education and research institutions in the world. Gourman Report and U.S. News and World Report rank it as one of the top five colleges of pharmacy in the United States. Graduates of the four-year Doctor of Pharmacy (Pharm. D.) program enter the profession as well qualified, highly sought-after pharmacists.

The college’s programs are supported by centers of excellence in diverse areas of pharmacy, such as geriatrics, pharmacy management and economics, rural pharmacy, pharmaceutical care, and drug design and delivery. The teaching, research, and service activities of the 54 full-time faculty members and hundreds of volunteer faculty are focused in five departments: medicinal chemistry, pharmaceutics, pharmaceutical care and health systems, experimental and clinical pharmacology, and pharmacy practice and pharmaceutical sciences (Duluth).

The Twin Cities campus college is housed in the University of Minnesota Academic Health Center, a complex designed specifically for health education, research, and practice. Pharmacy students have access to modern classrooms, laboratories, and more than 350,000 volumes of pharmacy resource materials.

The College extended its program to the Duluth campus in 2003, admitting 50 students per class. Students have access to vast University resources on the Duluth campus, including brand new purpose-built classrooms and labs for the College of Pharmacy.

The college is fully accredited by the American Council on Pharmaceutical Education, 311 W. Superior Street, Chicago, IL 60610 (312-664-3575).

History

Throughout the college’s history, its programs have evolved to meet the needs of the pharmacy profession. In 1892 the college initiated a program consisting of two years of professional studies leading to the doctor of pharmacy degree. To accommodate new knowledge and technology, the period of formal instruction was extended to a four-year baccalaureate degree (B.S.) in 1927, and increased to five years in 1954. A clinical component was added to the B.S. program in 1967; a postbaccalaureate doctor of pharmacy (Pharm.D.) program was established in 1971. The college added a six-year Pharm.D. program in 1981 and, in 1987, revised the professional education curricula and introduced career-tracking options. In 1995 the college introduced a new Pharm.D. program and phased out the former Pharm.D. and B.S. programs. The college extended its program to the Duluth campus in fall 2003, with an eventual enrollment of 200 Pharm.D. students on the campus.
Pharmacy Licensure

Graduates of the Pharm.D. program are eligible to take the state licensure examination to practice pharmacy. For more information about licensure, call the Minnesota Board of Pharmacy at 612-617-2201.

Programs of Study

Doctor of Pharmacy (Pharm.D.) Program — The Pharm.D. program prepares students to identify, resolve, and prevent drug-related problems. Students learn to provide patient care to achieve positive drug therapy outcomes that improve the quality of a patient’s life. Before enrolling in the college, students complete prepharmacy coursework at an accredited college. The required coursework listed in the curricula section of this catalog is offered on a full-time day school basis at both the Twin Cities and Duluth campuses.

Pharmacy Rural Education Program — The Pharmacy Rural Education Program (PREP) attracts and retains pharmacists in rural Minnesota. By participating in PREP, Pharm.D. students gain clinical experience in rural communities either through pharmacy clerkships or at interdisciplinary sites offered through the Rural Health School. Postdoctoral opportunities in PREP focus on developing new practice models for pharmacists in rural family practice settings.

Honors Program — The honors program provides Pharm.D. students with opportunities to interact with faculty, develop specialized skills, learn about research, and enhance their professional development. Specific activities, called honors options, include special projects and honors courses. Special projects are defined by a student and faculty member. They may be laboratory research projects, directed research readings, term papers or seminar preparation on research topics, community service projects, leadership projects, or other appropriate activities. There is no financial remuneration for honors options.

Admission to the honors program is granted to students in the professional program who self-identify and expect to graduate with a GPA of 3.50 or higher. Graduating students who have completed at least five honors options, including at least one honors project, and earned a qualifying GPA, graduate with the honors designation of cum laude (overall and required GPA of 3.50 to 3.65), magna cum laude (overall and required GPA of 3.66 to 3.74), or summa cum laude (overall and required GPA of 3.75 to 4.00) based on at least 60 credits taken at the College of Pharmacy. A memo on the student’s transcript indicates completion of honors options in the semester in which the option was completed.

Postgraduate Fellowship and Residency Programs — The postgraduate fellowship programs in pharmacy practice prepare clinical scientists to become leaders in drug research. The residency programs provide advanced training in general pharmacy practice, pharmaceutical care, and specialty practices such as cardiology, nephrology, infectious disease, transplant, and pediatrics.

Candidates for fellowships and most residencies must have a Pharm.D., M.S., or Ph.D. and equivalent clinical experience; be eligible for licensure to practice pharmacy in Minnesota; and meet other qualifications specific to the program for which application is made. Some residencies are available to candidates who have a B.S. in pharmacy. For information call 612-625-1900.

Graduate Programs — College of Pharmacy graduate programs for the M.S. and Ph.D. degrees are offered through the Graduate School in medicinal chemistry, pharmaceutics, and social, administrative, and clinical pharmacy. Details about these programs are in the Graduate School Catalog or by calling 612-624-9919 for medicinal chemistry, 612-624-5151 for pharmaceutics, or 612-624-2973 for social, administrative, and clinical pharmacy.

Outreach Education — The College of Pharmacy offers high-quality continuing education programs for pharmacists in the Upper Midwest who provide services to patients and health care organizations. These programs are offered through various media: live programs, correspondence courses, home-study videotapes, teleconferencing, computer-assisted instruction, and Web-based instruction. The college offers noncredit as well as University-credit programs. For more information, call the Office of Outreach Education at 612-625-8616 or visit www.pharmacy.umn.edu/outreach.
**Prepharmacy Advising**

The college’s Office of Student Services provides prepharmacy advising on both campuses and answers questions about admission requirements and application procedures for the Pharm.D. program. Students may write the College of Pharmacy, Office of Student Services, University of Minnesota, 5-110 Weaver-Densford Hall, 308 Harvard Street S.E., Minneapolis, MN 55455; call 612-624-9490, Monday through Friday, 8 a.m. to 4 p.m.; or e-mail phaross@umn.edu. The Office of Student Services can also refer students to prepharmacy advisers in all Minnesota and nearby Wisconsin colleges.

For inquiries about the program on the Duluth campus, write to University of Minnesota, College of Pharmacy Duluth, 386 Kirby Plaza, 1208 Kirby Drive, Duluth, MN 55812-2496, call 218-726-6000, or e-mail copd@d.umn.edu.

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**Prepharmacy Course Requirements**

(Each course must be for at least 3 semester credits.)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Requirement</th>
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<tbody>
<tr>
<td><strong>Biology</strong></td>
<td></td>
</tr>
<tr>
<td>General biology, including lab</td>
<td>1 course</td>
</tr>
<tr>
<td>Microbiology, including lab</td>
<td>1 course</td>
</tr>
<tr>
<td>Human anatomy, including lab</td>
<td>1 course</td>
</tr>
<tr>
<td>(If anatomy is combined with physiology, the entire anatomy and physiology sequence must be completed.)</td>
<td></td>
</tr>
<tr>
<td><strong>Calculus</strong></td>
<td></td>
</tr>
<tr>
<td>Semester—calculus</td>
<td>1 course</td>
</tr>
<tr>
<td><strong>Chemistry</strong></td>
<td></td>
</tr>
<tr>
<td>General chemistry, including labs</td>
<td>sufficient for organic chemistry</td>
</tr>
<tr>
<td>Organic chemistry, including labs</td>
<td>2 semesters or 3 quarters</td>
</tr>
<tr>
<td><strong>Physics</strong></td>
<td></td>
</tr>
<tr>
<td>General physics, including labs</td>
<td>entire intro sequence</td>
</tr>
<tr>
<td><strong>Behavioral Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Courses dealing with human behavior in society (psychology or sociology courses)</td>
<td>2 courses</td>
</tr>
<tr>
<td><strong>English Composition</strong></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td><strong>Economics</strong></td>
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<td></td>
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<tr>
<td><strong>Public Speaking</strong></td>
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**Admission Requirements**

**Doctor of Pharmacy Program** — Candidates must have a GPA of at least 3.00 on a 4.00 scale to qualify for admission. The required prepharmacy courses may be taken at any regionally accredited U.S. college. If these or any other postsecondary courses are taken outside of the United States and Canada, then the college must receive an official course-by-course evaluation from an accredited U.S. evaluation service. Pre-pharmacy courses must be taken A–F and completed with a grade of C or better before enrollment.

In addition to the required prepharmacy courses, students must complete at least 30 semester (45 quarter) credits of academic general education (non-science, non-mathematics, non-professional/vocational, non-physical education) courses before graduation. Prepharmacy credits earned in behavioral sciences, English composition, economics, and public speaking apply toward the general education requirement. It is recommended that this requirement be completed before entering. General education courses that do not fulfill prepharmacy requirements may be taken S–N (pass/fail).

**Transfer Students** — Students wishing to transfer from another pharmacy college must fulfill all Pharm.D. admission requirements. Transfer or post-baccalaureate students are admitted if space is available. Professional courses completed at another college of pharmacy are evaluated for equivalency to University of Minnesota College of Pharmacy professional coursework. Transfer students must spend at least one year at the University of Minnesota before qualifying for a degree. Transfer students do not apply via PharmCAS but are required to fill out a paper application available directly from the college.

**Application Procedures**

Application materials are available from PharmCAS at www.pharmcas.org. Supplemental applications are available on the college’s Web site, www.pharmacy.umn.edu. All application materials must be received by January 1. The highest-ranking applicants, ranked according to admissions criteria, are invited to interview with the faculty. Applicants are notified of admission decisions in April. Students are admitted to the college fall semester only. Applicants complete one application for entry into both the Twin Cities and Duluth campuses—campus choice may be indicated on the application.

**Early Decision Program**

Applicants who submit all required documents by September 1 and who have an overall GPA of at least 3.60 are considered for early admission and notified of a decision in November. If admitted, a $250 nonrefundable tuition deposit to hold a position in the college is due in full by December 1. Students in the...
early decision program must have at least 75 percent of the college's prerequisites complete at the time of application. During this phase, applicants cannot apply to another school of pharmacy associated with PharmCAS. Applicants who are accepted are obliged to accept the offer. Applicants who are not accepted for early admission may be considered for general admission and may apply to other colleges of pharmacy.

**English Language Requirements**

Students whose first (primary) language is not English must submit a Test of English as a Foreign Language (TOEFL) paper-based minimum score of 580 or computer-based minimum score of 237.

Applicants should register to take these exams by September 1, so that the test results are received by the January 1 deadline. To have TOEFL test results sent directly to the PharmCAS, enter code number 8246 on the answer sheet and Report Request form. For further information about TOEFL, call the Educational Testing Service at 609-771-7760.

**Evaluation of Applicants**

The Admissions Committee uses the following criteria to evaluate all applicants:

- Academic achievement, including GPA, PCAT, course selection, and course load
- Work experience (pharmacy experience desirable but not required)
- Three recommendations (from one health science professional/pharmacist, one employer, and one individual of applicant's choice)
- Participation in community/humanistic service, leadership roles, and college extracurricular activities
- Professional goals statements
- On-campus interview
- On-campus writing exercise

**Tuition Deposit**

Applicants who are admitted are required to pay a $250 nonrefundable tuition deposit to hold a position in the college. The deposit, along with a signed declaration of intent form, is due in full within four weeks of admission. The tuition deposit is applied to the student's fall semester tuition. The deposit is not refunded to applicants who do not enroll in the year for which they have been admitted.

**Background Study Requirement**

Minnesota law requires that any student who provides services that involve unsupervised direct contact with patients and residents at hospitals, nursing homes, and other health care facilities licensed by the Minnesota Department of Health undergo a background study conducted by the state. The study covers civil agency findings related to maltreatment of children or vulnerable adults and a range of criminal convictions. A student who is disqualified from having direct patient contact as a result of the background study and whose disqualification is not set aside by the Commissioner of Health, may not participate in a clinical placement in these licensed health care facilities. Failure to pass the background study is grounds for dismissal from the doctor of pharmacy program.

**Required Documents**

Application submitted to PharmCAS (www.pharmcas.org), including

- PharmCAS application fee
- Pharmacy College Admissions Test (PCAT) official score
- Official transcript from each college attended (transcripts from non-U.S. institutions must be accompanied by an official, course-by-course evaluation by an accredited U.S. evaluation service)

College of Pharmacy Supplemental Application form (www.pharmacy.umn.edu), including

- $75 nonrefundable application processing fee
- Three completed College of Pharmacy Recommendation forms
- University of Minnesota Financial Certification Statement (required only of international applicants)
- English language test scores (if nonnative English speaker)
Costs and Financial Aid

Tuition, Fees, and Living Expenses
For information on current tuition and fees, see www.onestop.umn.edu for Duluth, see www.d.umn.edu for Duluth. Expenses for room and board, laundry and clothing, required health insurance, recreation, travel, and other personal expenses vary depending on whether a student lives at home, in a residence hall, or in off-campus housing.

Students complete externships and clerkships as part of their required courses. These practice experiences are conducted at community and hospital sites throughout the state. Students are responsible for additional expenses related to externships and clerkships.

Residency and Reciprocity
Because the University is a state institution, Minnesota residents pay lower tuition than nonresidents. To qualify for resident status, students must reside in Minnesota for at least one calendar year before the first day of class attendance. The University has reciprocity agreements with North Dakota, South Dakota, Wisconsin, and Manitoba. For more information, contact the Residency and Reciprocity Office, 240 Williamson Hall, 231 Pillsbury Drive S.E., Minneapolis, MN 55455, 612-625-6330, or the Student Assistance Center, 21 Solon Campus Center, 1117 University Drive, Duluth, MN 55812, 218-726-8000, or the residency office on your campus.

Financial Aid
Pharmacy students finance their education from a combination of sources, including personal or family funds, grants and scholarships, loans, and employment. Applications for federal, state, and institutional loans and grants are administered by the University of Minnesota Office of Student Finance (OSF). To receive the Free Application for Federal Student Aid (FAFSA), contact the Office of Scholarships and Financial Aid, University of Minnesota, 210 Fraser Hall, 106 Pleasant Street S.E., Minneapolis, MN 55455, or the Student Assistance Center, 21 Solon Campus Center, 1117 University Drive, Duluth, MN 55812, 218-726-8000.

Applications should be filed as soon after January 1 as possible. Students may apply for financial aid before they are admitted to the college. The Health Professions Financial Aid Office in 2-693 Moos Tower provides walk-in counseling during selected office hours. For more information, call OSF at 612-624-1665 and ask to speak with a health professions financial aid counselor. Students in Duluth should contact the Office of the Registrar and Financial Aid at 218-726-8000.

Inquiries about financial aid for international students may be directed to the International Student and Scholar Services office at 612-626-7100.

College of Pharmacy Scholarships
Full-time pharmacy students on both campuses who are in good academic standing may apply for College of Pharmacy scholarships (see list below) that range from $500 to $3,000. To be considered for scholarships with financial need as a criterion, students must have a complete financial aid application on file in OSF.

College of Pharmacy scholarship applications are available from the Office of Student Services. The college’s Student Affairs Committee selects scholarship recipients. These scholarships are disbursed by OSF. If a fully funded student receives a scholarship, other forms of assistance are affected. Among the available scholarships are the following:

Sidney B. Benson Memorial Scholarship—For a deserving pharmacy student.

Charles A. Bowman Scholarship—For a 3rd year pharmacy student with an interest in rural pharmacy.

Edward A. Brecht Scholarship—For Minnesota students with an interest in community pharmacy.

6 Costs and Financial Aid
Harold H. Carpenter Memorial Scholarship—Based on interest and outstanding achievement in rural pharmacy.

Benjamin M. Cohen Memorial Scholarship—Based on financial need and academic achievement.

Leslie and Carolyn Collins Scholarship—For a deserving pharmacy student.

College Board Scholarships—For pharmacy students who demonstrate financial need.

College Board Experiential Scholarships—For Pharm.D. IV students who are enrolled in experiential courses outside the Twin Cities area and demonstrate financial need.

Frank E. DiGangi Scholarship—For pharmacy students who have demonstrated leadership and professional promise.

Glen and Lucy Einess Scholarship—For a 3rd or 4th year student with financial need.

Kappa Psi Scholarships—For Kappa Psi members based on financial need, activity in the Epsilon Chapter of Kappa Psi, and participation in community activities.

Keith K. Keller Memorial Scholarship—Based on financial need and interest in community pharmacy.

Cecil A. Krelitz Memorial Scholarships—For Pharm.D. I students from Minnesota who plan to practice community pharmacy.

Abbie N. Larson Memorial Scholarships—For students from Minnesota. Based on academic achievement and financial need.

Sam Lavine Memorial Scholarship—Based on financial need and demonstrated interest in community pharmacy.

Sarah Lavintman Mark Scholarship—For a Pharm.D. IV student interested in hospital pharmacy.

Claude A. Mather Memorial Scholarships—For students from Eveleth, Minnesota.

Samuel W. Melendy Memorial Scholarships—For the top ten students, based on academic performance the preceding year.

Samuel W. Melendy Research Scholarships—For students to conduct research projects. Based on scholastic performance and potential of the applicants. Award includes a summer stipend and funding for the following two semesters.

Fred Multaler Memorial Scholarship—For a student from Minnesota. Based on financial need.

NACDS Education Scholarship—For a deserving pharmacy student.

Paddock Laboratories Scholarship—Based on financial need. Preference to students who are single parents or from single-parent families.

William M. and Mildred E. Peters Academic Excellence Scholarships—Based on prepharmacy GPA.

William M. and Mildred E. Peters Achievement Scholarships—Based on financial need and extracurricular activities.

William M. and Mildred E. Peters Rural Scholarships—For students from rural Minnesota. Based on scholastic ability, extracurricular activities, and financial need. Recipients retain the scholarship until graduation as long as satisfactory academic progress is achieved.

Pharmacists Mutual Insurance Company Scholarship—For a student from the Midwest who plans to practice community pharmacy in one of the states where the company operates. Based on academic achievement and financial need.

Pharmacy Alumni Society Scholarship—For a deserving pharmacy student.

Harold W. Pratt Memorial Scholarship—For a deserving pharmacy student.

James J. Remes Scholarship—For a deserving pharmacy student.

Max and Rose Sadoff Memorial Scholarship—Based on financial need and demonstrated interest in pharmacy law or ethics.

Bert Supplee Memorial Scholarship—Based on academic performance or involvement in extracurricular activities or community service.

Target Scholarship—Based on involvement in extracurricular activities or community service.

Walgreens Scholarship—For a deserving pharmacy student.

Wal-Mart Pharmacy Scholarship—For a Pharm.D. II student who demonstrates interest in community pharmacy, scholastic excellence, leadership, and financial need.

F. J. Wulling Scholarship—For a deserving pharmacy student.
Student Life

Advising
Students choose faculty advisers who help them select emphasis area courses and discuss career opportunities. In addition, Office of Student Services staff advisers provide registration materials and discuss academic difficulties.

Housing
The University of Minnesota Housing & Residential Life office (612-624-2994) assists students with their on-campus or off-campus housing needs. Students in Duluth can call the Kirby Student Center, 218-726-7170, for off-campus housing.

Activities
Pharmacy students have opportunities for valuable experience and personal growth through activities outside the classroom. Students are encouraged to take an active part in a variety of student groups.

College Board—The Pharmacy College Board is the student government body. It acts as the students’ representative and liaison and sponsors many all-college activities. Its purpose is to advance students’ interest in the college through active student participation. It is composed of class representatives and leaders of all student organizations in the college.

Council for Health Interdisciplinary Participation (CHIP)—This health sciences student organization promotes a team approach to health care delivery through student services and community programs.

Career Development—The college offers a variety of career-oriented activities, including an annual career day on both campuses, internship and postgraduate job listings, and résumé writing and interview skills presentations.

Pharmacopa—The Epsilon Chapter of Kappa Psi Pharmaceutical Fraternity prepares the annual Pharmacopa, which contains articles of interest as well as pictures of members of the graduating class, faculty, and staff.

Pharmacy Day—This annual celebration is sponsored by the school’s College Board. Classes are excused for a day in April so students, faculty, and staff may attend a picnic.

Awards
The college’s Student Affairs Committee annually selects pharmacy students in good academic standing to receive the following awards:

APhA-ASP Senior Recognition Award—For advancing the profession of pharmacy through outstanding service to APhA-ASP.

American Pharmacists Association (APhA)/ASP Mortar and Pestle Professionalism Award—For a graduating student demonstrating professionalism and excellence in patient care, leadership and involvement in professional organizations, and extracurricular activities.

ASHP Student Leadership Award—For a third-year student with an interest in pharmacy practice in health systems and who has shown academic excellence and leadership ability.

Award of Excellence in Clinical Communications—For a Pharm.D. III or IV student demonstrating scholastic excellence and superior oral and written clinical communication skills. Sponsored by Facts and Comparisons.
Award of Excellence in Nonprescription Medication Studies—For a student demonstrating excellence in caring for patients in a community practice.

Carol A. Beatty Memorial Award—For the student demonstrating the greatest capability or interest in computer applications in pharmacy.

John T. Breckenridge Memorial Award—For a Pharm.D. II student in recognition of outstanding scholastic achievement, professional potential, and leadership ability.

Hallie Bruce Memorial Award—For a graduating student with outstanding achievement in hospital pharmacy.

Century Mortar Club Award—For a 3rd or 4th year professional student who has exhibited a commitment to promoting the profession of pharmacy and the safe and appropriate use of medications.

College Board Pharm.D. III Award—For outstanding contributions to and involvement in the profession, the college, and its students. Candidate must be active during the Pharm.D. III year.

Community Service Award—For a graduating student who has made significant contributions to community education.

Dean’s Award—For a student who has made significant contributions to the goals of the college.

Dean’s Research Award—For a Pharm.D. I, II, or III student in recognition of outstanding achievement in research activities.

Ole Gisvold Medicinal Chemistry Award—For a graduating student with an exceptional record in all chemistry-related courses in the professional curriculum and potential for graduate study in medicinal chemistry.

GlaxoSmithKline Patient Care Award—For a graduating student with an exceptional record in all chemistry-related courses in the professional program and potential for graduate study in medicinal chemistry.

Kappa Epsilon Award—For a student member who has rendered outstanding service to the college.

Kappa Psi Pharmacopa Awards—For the editors of the Pharmacopa.

Kappa Psi Award—For a graduating student member for scholastic performance.

Deborah A. Kasper Memorial Award—For the Pharm.D. I student who has contributed most to class esprit de corps.

Izaak M. Kolthoff Rho Chi Research Award—For a graduating student who has contributed to and shown promise of excellence in research in pharmaceutical science.

Lilly Achievement Award—For a graduating student who exemplifies scholastic and professional achievement, leadership ability, and ethical conduct.

Merck Awards—For graduating students with outstanding scholastic achievement.

Metropolitan Professional Pharmacists Society Award—For the president of the College Board.

Minnesota Pharmacists Association (MPhA) Outstanding Student Award—For an outstanding Pharm.D. II student.

MPhA Patient Education Award—For a graduating MPSA student for skill and ability in public health education.

MPhA/ASP President’s Award—For the president of the Minnesota Pharmacy Student Alliance.

Minnesota Society of Health-System Pharmacists Outstanding Student Award—For a graduating student (first professional degree) for scholastic excellence, contributions, and demonstrated leadership in hospital pharmacy.

Mylan Pharmaceuticals Excellence in Pharmacy Award—For a graduating student demonstrating academic achievement, high professional motivation, and superior proficiency in providing drug information services.

Pfizer Pharmaceuticals Community Pharmacy Internship Award—For a graduating student demonstrating excellence in community pharmacy internship.

Pfizer Nonprescription Drug Therapy Award—For a graduating student demonstrating leadership, academic excellence, and excellence in a community pharmacy internship.

Pharmacy Alumni Society Graduating Student Award—For a graduating student demonstrating academic and extracurricular involvement.

Pharmacy Alumni Society Student Award—For a Pharm.D. I, II, or III student demonstrating enthusiasm and the ability to stimulate personal and professional growth among others.

Phi Delta Chi Award—For a graduating student member for outstanding service to the fraternity and the college.

Phi Delta Chi Scholarship Award—For a student member for outstanding scholarship in the first professional year.

Phi Lambda Sigma Award—For the outstanding graduating member of Phi Lambda Sigma.

Rho Chi Award—For the Pharm.D. I student who has earned the highest GPA.

Roche Pharmacy Communications Award—For a graduating student for outstanding instructions and guidance to patients in a clinical practice.

Carol Windisch Memorial Award—For a student member of the Alpha Chapter of Kappa Epsilon for service to the community and fraternity, scholastic achievement, extracurricular activities, and leadership ability.

F. J. Wulling Pharm.D. I Award—For the student with the second highest GPA.

F. J. Wulling Pharm.D. II Award—For the student with the highest GPA.

F. J. Wulling Pharm.D. III Award—For the student with the highest GPA.
Student Code of Academic Integrity and Professional Responsibility

Part I — The University of Minnesota College of Pharmacy Honor System — developed, assumed, and administered by students — is intended to provide a framework of expectations and responsibilities for members of the College of Pharmacy community. It is intended to promote a spirit of community, a spirit of professionalism, and a spirit of trust. It challenges pharmacy students to adopt principles of professional behavior and responsibility within the context of academic honesty, integrity, and community standards. It challenges College faculty and administration to uphold, demonstrate and profess those principles and standards. It encourages all members of the College of Pharmacy community to discuss expectations in the spirit of mutual trust and respect.

The essence of the Honor System is codified in the "Pharmacy Student Code of Academic Integrity and Professional Responsibility" (the Code), which specifies student responsibilities relative to academic honesty and clinical obligations. The spirit and intent of the Honor System is to prevent the occurrence of such violations through proper education, and appeal to individual conscience and mutual understanding of expectations among the members of the College of Pharmacy community. The Code is communicated, promoted and maintained by the Honor Council, a group of students elected by their peers. Reports of alleged Code violations are investigated and processed by the Honor Council in a manner that assures the anonymity of all parties involved, except in cases of appeal by either party.

The integrity of the Honor System and Code carries with it a twofold responsibility: first, to personally abide by the principles and rules of academic honesty and clinical obligations, and second, to ensure observance of its rules by all members. Both aspects of the twofold responsibility ultimately rely on the conscience of each individual. Understanding of these responsibilities is signified in the "Honor Code Affirmation" taken by students upon acceptance into the College community; action in accordance with these responsibilities is signified by the "Honor Code Reaffirmation", made explicitly or implicitly on all College coursework submitted to fulfill requirements.

Part II — In addition to the general principles of academic integrity and professional responsibility mentioned above, each student is bound by the following specific provisions as part of the Code:

1. Each student will respect intellectual and physical property and will not use such property without the owner’s permission.
4. Each student recognizes that his or her primary responsibility while on clinical rotations is the care of her or his patients and that the patients’ welfare has precedence over a student’s personal educational objectives. The student will respect each patient’s privacy and dignity and will maintain confidentiality with regard to information about patients. Each student recognizes his or her responsibility to consult with the house staff, preceptor, or attending physician regarding each patient’s management.

5. Each student recognizes that part of her or his clinical obligations includes providing coverage when assigned (e.g., at clinics, at night, or on weekends). When such an assignment is made, a student will abide by it or make suitable alternative arrangements with the faculty member who made the assignment. If a student is convinced that such an assignment is inappropriate, the matter must be discussed with the course coordinator.

Part III—Upon accepting an offer of admission to the University of Minnesota College of Pharmacy, each student will be asked to sign the following statement:

“I hereby affirm that I have read, understand and accept the provisions and stipulations of the University of Minnesota College of Pharmacy Student Code of Academic Integrity and Professional Responsibility.”

All signed Affirmations of the Honor Code shall be kept on file and maintained by the Office of Student Services. Students who are unwilling to sign this statement will not be permitted to register for courses at the College.

The Honor Council will administer an Honor Code orientation for all incoming degree-seeking students shortly after matriculation in the College of Pharmacy. At the conclusion of this orientation, students will be asked to affirm the Honor Code by writing and signing the **Honor Code Reaffirmation** in their own hand.

A reaffirmation of the Code is required on all coursework submitted to fulfill course requirements in courses offered by the College of Pharmacy.

The reaffirmation must be explicitly made on examinations and may be required on other coursework, at the discretion of the instructor.

Part IV—Cases of suspected violations of the Honor Code will be reported or referred to the Honor Council, which will investigate and act on such reports. All Honor Council activities are conducted in a manner that honors confidentiality and fairness.

1. After reports of alleged violations of the Code are made to the Honor Council, the case is investigated, discussed and subsequently the Honor Council votes to (i) “dismiss” or (ii) issue a “finding of violation” and recommend a sanction.

2. A violation of the Code occurs if the majority of voting Honor Council members feel that the evidence and testimony met the standard of “more likely than not” that a violation did occur.

3. The Honor Council shall propose a recommended sanction if a student is found guilty of a violation of the Code. Some possible sanctions include, but are not limited to: written warning, probation, assignment of “F” for the assignment or course, or dismissal from the College.

4. Honor Council decisions or recommendations that are subsequently challenged by either party to a case are referred to the College of Pharmacy Academic Standing Committee for a formal hearing conducted in accordance with “due process” considerations. These considerations include the right of the “accused” to face the “accuser” and hence, a loss of anonymity.

Immunization Policy

All College of Pharmacy students must be within compliance of the Academic Health Center immunizations policy. All students must submit immunization forms, signed by a qualified health service provider, showing immunization of or immunity to Hepatitis B, MMR, Tetanus/Diptheria, Varicella (Chicken Pox), and Tuberculosis (with an initial two-step procedure).
Grading and Transcript Policy

1. This policy became effective fall 1997 for the Crookston, Morris, and Twin Cities campuses, replacing all previous grading policies. It may not be applied retroactively to any grades or symbols awarded before that time.

2. The University has two grading systems, A-B-C-D-F (with pluses and minuses) and S-N. Students may receive grades only from the grading system under which they have registered for a course.

In addition, there are registration symbols that do not carry grade points or credit.

3. Instructors must clearly define for a class, at one of its earliest meetings, the performance necessary to earn each grade or symbol.

4. No student may receive a bachelor's degree unless at least 75 percent of the degree-qualifying residence credits carry grades of A, B, C, or D (with or without pluses and minuses). Each campus, college, and department may choose not to accept academic work receiving a D (with or without a plus or minus).

Each campus, college, and department determines to what extent and under what conditions each grading system is used, may specify what courses or proportion of courses must be on one system or the other, and may limit a course to either system.

5. When both grading systems are available, students must choose one when registering for a course. The choice may not be changed after the end of the second week of classes (the first week in summer terms).

6. The University’s official transcript, the chronological record of the student’s enrollment and academic performance, is released by the University only at the student’s request or in accord with state or federal statutes; mailed copies have the University’s official seal printed on them. Students may obtain an unofficial transcript, except when they have a transcript hold on their record.

7. The University calculates for each student, both at the end of each grading period and cumulatively, a grade point average (GPA), the ratio of grade points earned divided by the number of credits earned with grades of A–F (including pluses and minuses). Both the periodic and cumulative GPA appear on each student’s record.

8. When a student repeats a course, all grades for the course appear on the transcript, the course credits may not be counted more than once toward degree and program requirements, and only the last enrollment for the course counts in the student’s GPA.

9. Students may petition the college scholastic committee or other appropriate body about this policy.

10. The following grades (with grade points as indicated) and symbols are used on transcripts.

A .... 4.00 ... Represents achievement that is outstanding relative to the level necessary to meet course requirements.

A- ... 3.67

B+ ... 3.33

B .... 3.00 ... Represents achievement that is significantly above the level necessary to meet course requirements.

B- ... 2.67

C+ ... 2.33

C .... 2.00 ... Represents achievement that meets the course requirements in every respect.

C- ... 1.67

D+ ... 1.33

D .... 1.00 ... Represents achievement that is worthy of credit even though it fails fully to meet the course requirements.

S .............. Represents achievement that is satisfactory (equivalent to a C- or higher and meets or exceeds course requirements in every respect). The S does not carry grade points and is not included in GPA calculations, but the credits count toward the student’s degree program if allowed by the department.

F or N........ Represents failure or no credit and indicates that coursework was completed but at an achievement level unworthy of credit, or was not completed and there was no agreement between the instructor and student that the student would be awarded an I.
Academic dishonesty is grounds for an F or N for the course. The F carries 0.00 grade points and is included in GPA calculations; the N does not carry grade points and is not included in GPA calculations.

I ............... Incomplete, a temporary grade that indicates coursework has not been completed. The instructor assigns an I when, due to extraordinary circumstances, the student was prevented from completing coursework on time. An I requires a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements during the student's next term of enrollment. For undergraduates and adult special students, work to make up an I must be submitted within one year of the last final examination of the student's next term of enrollment; if not submitted by that time, the I will automatically change to an F (if A–F registration) or N (if S-N registration). The instructor is expected to turn in the new grade within four weeks of the date work is submitted. When an I is changed to another symbol, the I is removed from the record. Once an I has become an F or N, it may be converted to any other grade by petition of the instructor (or department if the instructor is unavailable).

K .............. Indicates the course is still in progress and a grade cannot be assigned at the present time.

T .............. Transfer, a prefix to the original grade that indicates credits transferred from another institution or from one University college or campus to another.

V .............. Visitor, indicates registration as an auditor or visitor; does not carry credit or grade points.

W .............. Withdrawal, indicates a student has officially withdrawn from a course. Students in the College of Pharmacy may not withdraw from any course without action by the Academic Standing Committee.

X .............. Indicates a student may continue in a sequence course in which a grade cannot be determined until the full sequence of courses is completed. The instructor submits a grade for each X when the student completes the sequence.

Attendance

Students are expected to attend every class in which they are registered. Students must contact the Office of Student Services to inform the College of an unavoidable extended absence. The OSS will inform all of the student's course directors about the impending absences. It is the prerogative of the course director to excuse an absence (students may need proper documentation of illness, death in the family, etc.) or impose a penalty for an unexcused absence.

Academic Standing Committee Policy

The Academic Standing Committee, a subcommittee of the Student Affairs Committee, consists of five faculty members and two students. This committee meets regularly to monitor the academic progress of students on both campuses, consider petitions from students who wish to depart from the established program requirements or have a requirement waived, and adjudicate accusations of student misconduct. Accusations of student misconduct are handled by the Academic Standing Committee: 1) if referred by the honor council after its review of alleged violations of the Student Code of Academic Integrity and Professional Responsibility; or 2) for initial adjudication of alleged violations that fall under Part II below. The following is a list of Committee's policies.

Part I—Academic Progress

1. The committee periodically reviews the progress of students and can place students on probation at any time. Students on probation may be dismissed from the college if they are not making satisfactory progress. The committee informs students by mail of its actions.

2. Students who accumulate 6 or more credits of F, I, N, or D are warned of their academic status. Students who accumulate 8 or more credits of F, I, N, or D are placed on probation by the Academic Standing Committee. The Committee usually requires students on probation to repeat courses in which they received a grade that is lower than C-. Students who are required to repeat courses are on an extended program. Students on probation who receive a grade that is lower than C- are dismissed from the college.

3. Students who repeat courses must reregister for the courses.

4. Students who have an overall GPA in required and emphasis area courses of less than 2.00 are placed on probation. These students will be reviewed periodically and may be dismissed from the college if they are not making satisfactory progress.

5. Students who earn more than one F, I, or N grade in required courses in one academic year will be placed on probation and continued on probation for the academic year.
6. Students who fail a required or emphasis area course must repeat that course. Students who fail a required or emphasis area course twice will be dismissed from the college.

7. Students who earn an F or I in more than one required clerkship will be placed on probation or dismissed from the college. Students cannot make further progress toward the degree until making up at least one of the required clerkships.

8. Students who are dismissed from the college and wish to appeal must present information that was not available at the time of their dismissal and has a direct bearing on their academic performance. This information must be presented to the associate dean within four weeks of the dismissal decision. If the associate dean decides the information is new and substantial, the Academic Standing Committee will reconsider the dismissal decision. Students who wish to be considered for readmission after the four-week period must apply through the admission application process.

9. Students must satisfactorily complete all required and emphasis area courses and have an overall GPA in them of at least 2.00 before beginning externships or clerkships.

10. Students may have no more than four special examinations in prepharmacy coursework or course waivers in required pharmacy coursework.

11. A course waiver remains effect for six years from the date the course waiver form was signed.

12. The professional pharmacy program is a full-time continuous program. Students must petition the Academic Standing Committee should they require a leave of absence.

Part II — Student Misconduct

1. Any behavior by a pharmacy student that reflects on the student's qualifications or potential to become a competent and ethical professional is within the jurisdiction of the Academic Standing Committee to review. Aside from matters of academic integrity and professional responsibility in the classroom/clinic setting that are handled through the student honor system, the following behaviors constitute ground for discipline of students:
   a. Conduct which violates professional and or ethical standards; disrupts the operations of the University, College of Pharmacy or clinical training sites; or disregards the rights or welfare of patients, fellow students, college/clinical staff or other individuals.
   b. Unlawful conduct or other improper behavior which impairs the student's capacity to function as a healthcare professional.
   c. When presented with an alleged violation of the above standards or when a matter of academic integrity/professional responsibility is referred by the Honor Council, the Academic Standing Committee will hold a hearing to determine whether the alleged misconduct occurred. This hearing will comply with University standards for due process or fundamental fairness in a student disciplinary matter. Students who are found guilty of a violation by a preponderance of evidence will be subject to sanctions imposed by the committee, including but not limited to: warning, required compliance, probation, suspension, or dismissal.

2. The Academic Standing Committee's decisions in matters of student misconduct may be appealed by the President's Student Behavior Review Panel within 10 days of the decision.

Graduation Requirements

Degrees from the University of Minnesota are granted by the Board of Regents on the recommendation of the College of Pharmacy faculty. To be granted a degree, a student must

1. meet all prepharmacy course requirements (waived for students who have a B.S. in pharmacy from a college accredited by the American Council on Pharmaceutical Education);
2. meet all required and emphasis area course requirements;
3. earn minimum overall GPA of 2.00 in required and emphasis area courses;
4. have no more than 7 credits of F, I, N or D grades;
5. complete 30 credits in general education courses (waived for students who have a B.S. in pharmacy from a college accredited by the American Council on Pharmaceutical Education);
6. earn a minimum of 30 credits at the University of Minnesota; and
7. meet all financial obligations to the University.

Time Limit for Earning the Pharm.D. Degree

1. Students in the Pharm.D. program must complete all degree requirements within eight years of the time they first register for a required or emphasis area course.
2. Students granted a leave of absence of two continuous semesters or less are entitled to meet only those graduation requirements for their original graduating class.
3. Students granted a leave of absence of more than two continuous semesters or more than one leave of absence of two continuous semesters or less, must meet the graduation requirements in effect at the time of graduation.
Graduating With Distinction

College of Pharmacy students have the option of graduating with distinction if a cumulative GPA of 3.75 or higher in the required College of Pharmacy curriculum coursework is attained at the time of graduation. Students with a cumulative GPA of 3.90 or higher have the option of graduating with high distinction. Students who have completed the Honors Program will have the option of graduating with both the *summa cum laude* designation and the appropriate with distinction or with high distinction designation. For transfer students, the GPA must be based on a minimum of 45 credits taken in the College of Pharmacy, University of Minnesota.

Chemical Dependency Policy

The College of Pharmacy supports the efforts of chemically dependent students to become free of their dependency problems. In dealing with chemically dependent students, the college’s procedure involves intervention and requiring students to join treatment and rehabilitation programs. The procedure ensures the safety of patients with whom students may come in contact and protects the interests of patients, students, the college, and faculty.

The following steps are taken as soon as a student has been identified as having chemical dependency problems.

1. The student is granted a medical leave of absence by the Academic Standing Committee if he or she is participating in educational activities that involve direct patient contact (e.g., clinical clerkships or externships). The request for a leave may be initiated by the student or the associate dean. Students participating in educational activities that do not involve direct patient contact are not required to take a medical leave of absence.

2. The associate dean advises the student to enroll in a chemical dependency treatment program or a different mode of treatment contingent on the associate dean’s approval. The student must provide evidence of successful completion of the treatment.

3. The associate dean advises the student to join a sobriety support group, e.g., Pharmacists Aiding Pharmacists, after completion of the treatment program.

4. The student is asked to give the associate dean permission to solicit letters of reference from counselors, employers, or members of the sobriety support group to monitor the progress of the student’s rehabilitation program.

5. The student is asked to agree to give urine samples at any time, without prior notification, for detection of drug abuse.

6. The associate dean makes recommendations to the Academic Standing Committee to terminate the student’s medical leave of absence and allow the student to participate in educational activities that do not involve direct patient contact after obtaining evidence that the student has completed the treatment program and is participating in the rehabilitation program.

7. The associate dean makes recommendations to the Academic Standing Committee to permit the student to participate in educational activities involving direct patient contact after obtaining evidence that the student has been chemically free for at least ten weeks.

8. If the student is a licensed pharmacist and her or his license was suspended because of chemical dependency, the State Board of Pharmacy lifting the suspension may be used as evidence of sobriety and is a prerequisite for participation in educational activities involving direct patient contact. The license suspension being lifted does not obligate the college to allow the student to participate in educational activities that involve direct patient contact.

9. Office of Student Services staff are not required to report to the Academic Standing Committee on students who initiate information about a personal chemical dependency problem while being counseled. The staff may report such information to the associate dean.

10. The Academic Standing Committee may dismiss from the college students who have a recurrence of chemical dependency problems after completing the treatment and rehabilitation program described above.

11. If the student and the associate dean do not reach an agreement on a treatment and rehabilitation program, either may request a hearing by the Academic Standing Committee. The committee carefully considers all relevant factors, using procedural due process as a guide to its action. The student may appeal the Academic Standing Committee’s decisions to the President’s Student Behavior Review Panel within 10 days of the decision.
Pharm.D. Curriculum

The professional program's graduates are prepared to enter pharmacy practice, advanced professional training programs, graduate education, and research. The program covers the chemical, biological, physical, social, and clinical sciences that underlie pharmacy. A common patient care process is used to teach students how to meet drug-related needs at a patient-specific level. Students develop skills in problem solving, communication, and analytical thinking. The program emphasizes professional ethics, social responsibility, professional citizenship, and commitment to lifelong learning.

The first three years of the curriculum provide the fundamental components of pharmacy education needed to practice in a variety of settings. Beginning in the second year, students can take elective courses in specific areas of interest to round out their required courses. Students may focus on research.

The curriculum is subject to change.

First Professional Year
(Course credits are listed in parentheses. At least 12 credits per term are required for full-time status.)

Fall Semester (18 credits)
Phar 6111 — Practice of Pharmaceutical Care I ............... (4)
Phar 6141 — Medical Microbiology and Immunizations .... (1)
Phar 6151 — Biochemistry of Medicinals I .................. (3)
Phar 6161 — Drug Delivery I ................................... (3)
Phar 6171 — Pharmaceutical Care Lab I (2)
Phsl 6061 — Physiology and Neurophysiology Systems ... (3)

Spring Semester (19 credits)
Phar 6112 — Practice of Pharmaceutical Care II ............. (4)
Phar 6131 — Pharmacy and the Health Care System .......... (3)
Phar 6152 — Biochemistry of Medicinals II .................... (3)
Phar 6159 — Immunology and Biotechnology ................. (3)
Phar 6162 — Drug Delivery II .................................... (3)
Phar 6165 — Pharmaceutical Calculations (1)
Phar 6172 — Pharmaceutical Care Lab II ....................... (1)
Phar 6177 — Patient Assessment (1)

Second Professional Year

Fall Semester (17 credits)
Phar 6121 — Pharmacotherapy I ................................ (5)
Phar 6132 — Biostats and Drug Literature Evaluation ........ (2)
Phar 6154 — Medicinal Agents I ................................ (3)
Phar 6163 — Pharmacokinetics ................................ (3)
Phar 6173 — Pharmaceutical Care Lab III .................. (1)
Phcl 5101 — Pharmacology I .................................. (3)

Spring Semester (14 credits)
Phar 6122 — Pharmacotherapy II ................................ (5)
Phar 6133 — Pharmacy Practice Management ............... (3)
Phar 6155 — Medicinal Agents II ................................ (2)
Phar 6174 — Pharmaceutical Care Lab IV .................... (2)
Phcl 5102 — Pharmacology II ................................ (2)
Plus elective courses

Third Professional Year

Fall Semester (14 credits)
Phar 6123 — Pharmacotherapy III ................................ (5)
Phar 6156 — Medicinal Agents III ................................ (4)
Phar 6164 — Biopharmaceutics ................................ (3)
Phar 6175 — Pharmaceutical Care Lab V .................... (1)
Phar 6181 — Pharm.D. Paper and Seminar .................... (1)
Plus elective courses

Spring Semester (12 credits)
Phar 6124 — Pharmacotherapy IV ................................ (5)
Phar 6134 — Law and Ethics in Pharmacy Practice ........ (2)
Phar 6157 — Human Nutrition and Drug Therapy .......... (3)
Phar 6xxx — Professional Outcomes ......................... (2)
Plus elective courses

Fourth Professional Year

Summer Session
Required externships or clerkships
Elective clerkships or courses

Fall Semester
Phar 6183 — Pharm.D. IV Paper ................................ (2)
Required externships or clerkships
Elective clerkships or courses

Spring Semester
Phar 6182 — Pharm.D. IV Seminar ............................ (1)
Required externships or clerkships
Elective clerkships or courses

Research Emphasis

The research emphasis provides students the opportunity to participate in research and prepares them for graduate education. Students plan individualized programs with faculty advisers.
Course Descriptions

The college’s courses are offered by five departments: medicinal chemistry, pharmaceutics, pharmaceutical care and health systems, experimental and clinical pharmacology, and—on the Duluth campus—pharmacy practice and pharmaceutical sciences. Medicinal chemistry courses (biochemistry of medicinals, medicinal agents, biotechnology, immunology) and pharmacology courses focus on understanding the actions and therapeutic uses of various types of medications that affect organ systems, immune functions, and infectious disease related problems. Pharmaceutics courses (drug delivery, pharmacokinetics, biopharmaceutics) concentrate on principles involved in drug dosage formulations; dosage form design; and how drugs are absorbed, distributed, and eliminated from the body. The experimental and clinical pharmacology sequence that applies basic and clinical sciences to the patient by focusing on the nature and cause of various disease states and the treatment of these disorders. Pharmaceutical care and health systems encompasses a pharmaceutical care sequence which examines the various roles of the pharmacist, current and future pharmacy practice, and a pharmacy management and public policy sequence. All courses on the Duluth campus are offered by the pharmacy practice and pharmaceutical sciences department.

College of Pharmacy Courses

Phar 1001. Orientation to Pharmacy. (1 cr; S-N only) Pharmacy career opportunities, pharmacist’s role, issues faced by pharmacy profession, information about College of Pharmacy.

Phar 1002. Health Sciences Terminology. (2 cr. Prereq—Course orientation [online or in-person]) Self-study introduction to terminology used in health sciences. Students systematically analyze/build words from combining forms, suffixes, and prefixes.


Phar 5201. Health Sciences Applied Terminology. (2 cr. Prereq—[1002 or basic knowledge of human anatomy/physiology], course orientation [online or in-person]) Self-study course. Medical terms, how to apply them when documenting/reporting patient care procedures.

Phar 5270. Therapeutics of Herbal and Other Natural Medicinals. (2 cr; A–F only. Prereq—Phsl 6051, organic chemistry, pathophysiology of disease states, third yr pharmacy student) Herbal products/supplements. Pharmacology, clinical indications, and drug interactions of most commonly used products in nontraditional complementary health care. Historical significance and evidenced-based role of these products in health care. Case studies of clinical applications.


Phar 6100. Computer and Internet Skills in Pharmacy. (1 cr; A–F only) Computer applications in pharmacy.

Phar 6111. The Practice of Pharmaceutical Care I. (4 cr; A–F only. Prereq—1st yr pharmacy student, ¶6171) The practice of pharmaceutical care, the pharmacy profession, drug information retrieval, professional communications, problem-solving skills, introductory clerkship.

Phar 6112. The Practice of Pharmaceutical Care II. (4 cr; A–F only. Prereq—1st yr pharmacy student, 6111, ¶6172) Comprehensive pharmaceutical care, health belief model, legal issues, prescription processing, clerkship continued and introduction to pharmacotherapy issues.


Course Symbols

.........The comma, used in prerequisite listings, means “and.”
§ ......Credit will not be granted if credit has been received for the course listed after this symbol.
¶ ......Concurrent registration is required (or allowed) in the course listed after this symbol.
# ......Approval of the instructor is required for registration.

A prerequisite course listed by number only (e.g., prereq 5246) is in the same department as the course being described.

A class rank prerequisite (e.g., 3rd yr) states the minimum class standing a student must hold to register for a course without special permission from the Academic Standing Committee.
Phar 6131. Pharmacy and the Health Care System. (3 cr; A–F only. Prereq–1st yr pharmacy student) Delivery of pharmaceuticals and pharmacy services in the U.S. health care system, issues in hospital and community practice, characteristics of the pharmaceutical industry, economic and financial issues in delivering pharmaceutical services.


Phar 6133. Pharmacy Practice Management. (3 cr; A–F only. Prereq–2nd yr pharmacy student) Principles of pharmacy management, including inventory control, purchasing, pricing, financial analysis, and personnel management.

Phar 6134. Law and Ethics in Pharmacy Practice. (2 cr; A–F only) Minnesota and federal laws, rules, regulations and court decisions affecting pharmacy practice. Moral and ethical considerations that affect and influence pharmacy practice.

Phar 6141. Medical Microbiology and Immunizations. (1 cr; A–F only) Background knowledge in medical microbiology; evaluating information on emerging infectious diseases, recommending immunization schedules for childhood/adult vaccines.

Phar 6150H. Honors Course: Medicinal Chemistry Seminar. (1 cr [max 2 cr]; A–F only. Prereq−#) Current topics in medicinal chemistry.

Phar 6151. Biochemistry of Medicinals I. (3 cr; A–F only. Prereq–1st yr pharmacy student, ¶6171) Biochemistry topics required for understanding pharmacodynamic action and therapeutic use of medicinal agents.

Phar 6152. Biochemistry of Medicinals II. (3 cr; A–F only. Prereq–6151, ¶6172) Intermediary metabolism of carbohydrates, lipids, amino acids and nucleic acids and how these pathways are affected by therapeutic agents. Introduction to bioenergetics and drug metabolism.


Phar 6154. Medicinal Agents I. (3 cr; A–F only. Prereq–6152, ¶PhcI 5101) Basic principles of drug design, metabolism of action, and receptor interaction. Chemical/biological properties and therapeutic uses of autonomic, antihistaminic, renal, and cardiovascular drugs.

Phar 6155. Medicinal Agents II. (2 cr; A–F only. Prereq–6154, ¶6174, ¶PhcI 5102) Chemical/biological properties and therapeutic uses of drugs affecting central nervous, endocrine, and intermediary metabolism systems.

Phar 6156. Medicinal Agents III. (4 cr; A–F only. Prereq–6152, 6153, 6154) Therapeutic properties and uses of antiviral, anti-infective and antineoplastic agents.

Phar 6157. Human Nutrition and Drug Therapy. (3 cr; A–F only. Prereq–6152) Basic concepts of human nutrition and clinical application.

Phar 6158. Recombinant DNA-Derived Drugs. (1 cr; A–F only. Prereq–6151) Biotechnology as it relates to basic/clinical pharmaceutical sciences. Emphasizes recombinant DNA techniques and preparation/use of biotechnology-derived agents in diagnosing/treating disease.


Phar 6161. Drug Delivery I. (3 cr; A–F only. Prereq–¶6171) Mathematics associated with drug dispensing; technology of common pharmaceutical dosage forms. Phenomenological and theoretical basis of equilibrium and steady-state processes controlling drugs and dosage forms.

Phar 6162. Drug Delivery II. (3 cr; A–F only. Prereq–6161, ¶6172) Phenomenological and theoretical basis of kinetic and dynamic processes controlling drugs and dosage forms.

Phar 6163. Pharmacokinetics. (3 cr; A–F only. Prereq–Calculus II (quarter), calculus I (semester) or equiv, 6162) Physiological basis for drug absorption, distribution, metabolism and excretion; use of mathematical principles and equations to describe these processes as well as design dosage regimens for individual patients.


Phar 6165. Pharmaceutical Calculations. (1 cr; A–F only. Prereq–1st yr pharmacy student) Performing pharmaceutical calculations for patient care in all pharmacy practice environments.

Phar 6171. Pharmaceutical Care Lab I. (2 cr; A–F only. Prereq–¶6151, ¶6111, ¶6161) Integrating basic and clinical science curriculum in a lab setting.

Phar 6172. Pharmaceutical Care Lab II. (1 cr; A–F only. Prereq–6112, 6152, 6162) Basic/clinical science curriculum in lab setting. Longitudinal care in lab setting.

Phar 6173. Pharmaceutical Care Lab III. (1 cr; A–F only. Prereq–¶6121, ¶6132) Integrating basic and clinical science curriculum in a lab setting.
Phar 6174. Pharmaceutical Care Lab IV. (2 cr; A–F only. Prereq–6122) Basic/clinical science curriculum in lab setting. Longitudinal care in lab setting.

Phar 6175. Pharmaceutical Care Lab V. (1 cr; A–F only. Prereq–6112, 6114) Integrating basic and clinical science curriculum in a lab setting.

Phar 6176. Patient Assessment. (2-3 cr; A–F only. Prereq–Phcl 5101, Phcl 5102, Phcl 6051) Physical/patient assessment skills as they relate to provision of pharmaceutical care.

Phar 6177. Patient Assessment. (1 cr; A–F only. Prereq–1st yr pharmacy student) How to obtain accurate health histories and perform systemic physical assessments of adult patients in pharmacy practice.

Phar 6181. Pharm. D. Paper and Seminar. (1 cr; A–F only. Prereq–3rd yr pharmacy student) How to write a research paper. Students present research project plans. Professional behavior, patient confidentiality, universal precautions.

Phar 6182. Pharm.D. IV Seminar. (1 cr; S-N only. Prereq–4th yr pharmacy student, 6181) Students present thesis topics to peers and faculty evaluators.

Phar 6183. Pharm.D. IV Paper. (2 cr; S-N only. Prereq–4th yr pharmacy student, 6181) Final paper describing a hypothesis-driven research project, patient-care oriented project, management project, drug-usage evaluation, or extensive literature review.

Phar 6210. Immunization Tour. (1 cr; A–F only. Prereq–6175 or 6176) Role that health care practitioners play with respect to population based disease prevention. Students work collaboratively with students from another health discipline in planning/delivering influenza vaccination clinics. Student-led collaborative public health intervention.

Phar 6211. Non-Prescription Drug Therapy: Focus on Patient Self-Care. (2 cr; A–F only. Prereq–6112) Expands on over-the-counter medications presented in 6112. Diagnostic and durable medical equipment available in community pharmacies as well as the use of alternative medications is discussed.

Phar 6212. Dermatology. (1 cr; A–F only. Prereq–2nd or 3rd yr pharmacy student) Pathophysiology and pharmacotherapy of dermatologic disorders.

Phar 6213. Pharmacy Practice in Ambulatory Setting. (2 cr; A–F only. Prereq–2nd or 3rd yr pharmacy student) Pharmaceutical care in an ambulatory (community) setting, and the role of a general pharmacy practitioner.

Phar 6214. Pharmaceutical Care Clinic. (1-2 cr. Prereq–Pharmacy student) Patients make appointments for pharmacy students to provide pharmaceutical care in presence of practitioner. Second/third year students learn “gold standard” for patient care. First year students participate in patient assessments as care plan team members. Weekly student case presentations/discussions.


Phar 6216. Pharmacokinetic Data Analysis and Simulation With SAAM II. (2 cr; A–F only. Prereq–6163 with grade of at least B or #) Introduction to SAAM II: an application for modeling, simulating, and analyzing pharmacokinetic/pharmacodynamic data.


Phar 6220. Pediatric Drug Therapy. (2 cr; A–F only. Prereq–3rd yr pharmacy student) Pathophysiology/therapeutics of disease states. Common issues encountered in providing pharmaceutical care to pediatric patients.


Phar 6222. Advanced Pharmaceutical Compounding. (2 cr; A–F only. Prereq–2nd or 3rd yr pharmacy student) Expands compounding skills beyond those gained in pharmaceutical care lab.

Phar 6223. Pharmacokinetics Research Seminar. (1 cr [max 2 cr]; A–F only. Prereq–6163 with grade of at least B) Students critically evaluate literature in pharmacokinetics, pharmacodynamics, and drug metabolism.

Phar 6231. Community Pharmacy Management. (2 cr; A–F only. Prereq–6133) Management techniques needed in community pharmacy practice, with emphasis on marketing and service.


Phar 6234. Pharmaceutical Economics and Public Policy. (2 cr; A–F only) Economic and public policy aspects of the U.S. health care system. Health economic principles and trends applied to the pharmaceutical market.

Phar 6246. Honors Course: Chemical Aspects of Drug Metabolism and Bioactivity. (2 cr; A–F only. Prereq–#) Chemical/ enzymatic mechanisms of biotransformation/bioactivation of drugs/other xenobiotics. Reactivity/fate of bioactivated metabolites.

Phar 6246H. Honors Course: Chemical Aspects of Drug Metabolism and Bioactivation. (2 cr; A–F only. Prereq–#) Chemical/ enzymatic mechanisms of biotransformation/bioactivation of drugs and other xenobiotics. Reactivity/fate of bioactivated metabolites. Taught every other year.

Phar 6247H. Honors Course: Advanced Concepts in Drug Design. (2 cr; A–F only. Prereq–#) Current approaches to rational design of drugs.

Phar 6250H. Honors Course: Social and Administrative Pharmacy Seminar. (1 cr; A–F only. Prereq–#) Current topics in hospital pharmacy.
Phar 6260H. Honors Course: Pharmaceutics Seminar. (1 cr; A–F only. Prereq–#) Contemporary topics in pharmaceutics research.

Phar 6270H. Honors Course: Critical Care Seminar. (2 cr; A–F only. Prereq–#) Research/topics of importance to experimental/clinical pharmacology.

Phar 6293. Directed Research I. (1-5 cr. Prereq–#) Directed research in pharmacy practice, pharmaceutics, medicinal chemistry, or experimental and clinical pharmacology.

Phar 6294. Directed Study I. (1-5 cr. Prereq–#) Directed studies in pharmacy practice, pharmaceutics, medicinal chemistry, and experimental or clinical pharmacology.

Phar 6393. Directed Research II. (1-5 cr. Prereq–#) Directed research in pharmacy practice, pharmaceutics, medicinal chemistry, or experimental and clinical pharmacology.

Phar 6394. Directed Study II. (1-5 cr. Prereq–#) Directed studies in pharmacy practice, pharmaceutics, medicinal chemistry, and experimental or clinical pharmacology.

Phar 6493. Directed Research III. (1-5 cr. Prereq–#) Directed research in pharmacy practice, pharmaceutics, medicinal chemistry, or experimental and clinical pharmacology.

Phar 6494. Directed Study III. (1-5 cr. Prereq–#) Directed studies in pharmacy practice, pharmaceutics, medicinal chemistry, and experimental or clinical pharmacology.


Phar 7120. Community Externship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Students assigned to participating community pharmacies and involved in community practice activities full-time for 5 weeks.

Phar 7121. Institutional Externship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Students assigned to participating hospital pharmacies. Student participation in drug distribution, IV compounding, clinical services and administrative activities full-time for 5 weeks.

Phar 7122. Acute Patient Care Clerkship I. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Experience in an inpatient setting. Students responsible for drug-related needs of individual patients full-time for 5 weeks.

Phar 7123. Ambulatory Patient Care Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Experience using management techniques in an institutional pharmacy full-time for 5 weeks.

Phar 7124. Geriatrics Patient Care Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Students work with other healthcare professionals/caregivers in outpatient and long-term care settings for five weeks.

Phar 7125. Pediatrics Patient Care Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Students responsible for drug-related needs of individual pediatric patients full-time for 5 weeks. Understanding pharmacokinetic and pharmacodynamic differences between adult and pediatric patients.

Phar 7126. Patient Care Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Patient care experience in any setting; students responsible for drug-related needs of individual patients full-time for 5 weeks.

Phar 7128. Acute Patient Care Clerkship II. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Experience in an inpatient setting. Students responsible for all drug-related needs of individual patients full-time for 5 weeks.

Phar 7211. Patient Care Clerkship I. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Patient care experience in any patient care setting. Students are responsible for drug-related needs of individual patients full-time. Five weeks.

Phar 7212. Patient Care Clerkship II. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Patient care experience in any setting. Students are responsible for drug-related needs of individual patients full-time. Five weeks.

Phar 7213. Patient Care Clerkship III. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Patient care experience in any setting. Students are responsible for drug-related needs of individual patients full-time. Five weeks.

Phar 7215. Community Patient Care Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Patient care experience in a community pharmacy in which student is responsible for assessing drug-related needs of patients, developing care plans and performing follow-up evaluations full-time for 5 weeks.

Phar 7221. Community Pharmacy Management Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Experience using management techniques in a community pharmacy full-time for 5 weeks.

Phar 7222. Institutional Pharmacy Management Clerkship. (4 cr; A–F only. Prereq–Pharm.D. I–III, Minn Board of Pharm intern, criminal bkgd chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Experience using management techniques in an institutional pharmacy full-time for 5 weeks.
Phar 7242. Clerkship Elective II. (4 cr; A–F only. Prereq–Pharm.D. I-III, Minn Board of Pharm intern, criminal bgkgr chk, BLS CPR cert for infants/child/adults, proof of negative Mantoux test [or explanation of positive test], proof of chicken pox immunity) Clerkship experience in pharmacy-related area full-time. Five weeks.

Contributing Departments

ECP 5610. Pharmacoepidemiology. (2.0 cr; prereq [PubH 5320, PubH 5330] or #) Application of epidemiologic principles to study, use, and beneficial/adverse outcomes of drugs in human populations.

ECP 5620. Drug Metabolism and Disposition. (3.0 cr; prereq Grad student or #; A–F only) Oxidative/conjugative enzymes systems involved in human drug metabolism/disposition. Various in vitro models used to evaluate drug metabolism or chemical entity, pros/cons of each. Factors involved in conducting in vivo studies. Components used to predict in vivo drug disposition from in vivo studies.

MedC 5185. Principles of Biomolecular Simulation. (3 cr; Prereq–Chem 3502 or #) Molecular simulation for students in medicinal chemistry, pharmacoeconomics, biochemistry, and chemical physics.


MedC 5245. Introduction to Drug Design. (3 cr; A–F only. Prereq–Chem) Concepts that govern design/discovery of drugs. Physical, bioorganic, medicinal chemical principles applied to explain rational design, mechanism of action drugs.

MedC 5494. Advanced Methods in Quantitative Drug Analysis. (3 cr; A–F only. Prereq–MedC grad student or #) Quantitative methods (HPLC, GC, TLC, and immunoassays) for analysis of drugs and metabolites in biological fluids. Advanced techniques such as capillary electrophoresis, supercritical fluid chromatography, GC-MS, LC-MS, and tandem mass spectrometry. Chromatographic theory and statistical approaches to method validation.

MedC 5495. Vistas in Medicinal Chemistry Research. (1 cr; S-N only) Selected topics of contemporary interest in medicinal chemistry.

MedC 5600. General Principles of Medicinal Chemistry. (3 cr; A–F only. Prereq–MedC grad student or #) Fundamental principles of drug receptors as therapeutic targets, drug-receptor interactions, enzyme inhibitors, drug metabolism and disposition.

Phcl 5101. Pharmacology for Pharmacy Students. (3 cr; A–F only. Prereq–Regis 2nd yr pharmacy student or #) Action/fate of drugs. Lectures, lab.

Phcl 5102. Pharmacology for Pharmacy Students. (2 cr; A–F only. Prereq–5101 or #) Action/fate of drugs.

Phsl 6051. Systems Physiology. (4 cr; A–F only. Prereq–[Prev or current] neuroscience course; [biochemistry, human anatomy] recommended) General physiology, endocrine, circulatory, respiratory, digestive, energy metabolism, and renal physiology examined at molecular, cellular, and organ level. Emphasizes homeostasis and basic regulatory aspects of physiological processes of organ systems.
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Timothy S. Wiedmann, Ph.D., Director of Graduate Studies in Pharmaceutics (612-624-5151)

Departments
Experimental and Clinical Pharmacology
Medicinal Chemistry
Pharmaceutical Care and Health Systems
Pharmaceutics
Pharmacy Practice and Pharmaceutical Sciences (Duluth)
**Faculty**

*Recipient of the Horace T. Morse-Minnesota Alumni Association Award for Outstanding Contributions to Undergraduate Education*

Yusuf J. Abul-Hajj, Ph.D., Professor and Head, Department of Medicinal Chemistry
Jacqueline R. Barber, Pharm.D., Associate Professor
Grant W. Anderson, Ph.D., Assistant Professor
Priya Bardal, Pharm.D., Assistant Professor and Assistant Program Director
S. Bruce Benson, Ph.D., Associate Professor and Associate Director of Professional and External Relations
Sarah M. Biebighauser, Pharm.D., Assistant Professor and Director, Pharmaceutical Care Learning Center–Duluth
Angela K. Birnbaum, Ph.D., Assistant Professor
Barbara F. Brandt, Ph.D., Professor and Assistant Vice President, Academic Health Center
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*Patrick E. Hanna, Ph.D., Professor

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Thomas M. McKennell, M.S., Assistant Professor Emeritus
Peter C. Morley, Ph.D., Professor
Ramaiah Muthyala, Ph.D., Associate Professor and Associate Program Director
Herbert T. Nagasawa, Ph.D., Professor
Philip S. Portoghese, Ph.D., Professor
Yueh-Erh (Jady) Rahman, M.D., Professor Emeritus
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Rory P. Remmel, Ph.D., Professor
Edward G. Rippie, Ph.D., Professor Emeritus
Raquel R. Rodriguez, Ph.D., Assistant Professor and Director of Experiential Education

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*Ronald J. Sawchuk, Ph.D., Professor
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Bryan F. Yeager, Pharm.D., Associate Professor and Clinical Specialist
*Cheryl L. Zimmerman, Ph.D., Professor

University Information

Twin Cities Campus
(area code is 612)

Boynton Health Service
Boynton Health Service Building
625-8400

Child Care Center
1600 Rollins Avenue S.E.
627-4014

College of Continuing Education Evening Classes
101 Westbrook Hall
624-4000

Counseling and Consulting Services
109 Eddy Hall
624-3323

Financial Aid
2-693 Moos Tower
(health professions office)
624-4138

Housing & Residential Life
Comstock Hall—East
624-2994

One Stop Student Services Center
200 Fraser Hall
624-1111

Student Accounts Receivable
200 Fraser Hall
624-1111

University Information
625-5000

Duluth Campus
(area code is 218)

Continuing Education
Darland Administration Building
726-8808

Counseling Services
104 Health Services
726-8155

Financial Aid
21 Solon Campus Center
726-8000

Health Service
104 Health Services
726-8155

Housing
On-campus: 149 Lake Superior Hall
726-8178
Off-campus: Kirby Student Center
726-7170

Student Accounts Receivable
Windows 15/16, Darland Administration Building
726-7190

Student Assistance Center
21 Solon Campus Center
726-8000

UMD Information
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This catalog is available online at www.catalogs.umn.edu/phar/index.html.

Class Schedule — This online publication, available through http://onestop.umn.edu, is updated every semester. It lists day school courses complete with hours, rooms, instructors, prerequisites, registration instructions, examination fees, maps, grading definitions, and other useful information.

Other Catalogs — Evening and summer courses are listed in the College of Continuing Education Catalog and Summer Session Catalog, respectively. Catalogs are also published for other University colleges.

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Some student information — name, address, electronic (e-mail) address, telephone number, dates of enrollment and enrollment status (full time, part time, not enrolled, withdrawn and date of withdrawal), college and class, major, adviser, academic awards and honors received, and degrees earned — is considered public or directory information. Students may prevent the release of public information. To do so, they must notify the records office on their campus (see below).

Students have the right to review their educational records and to challenge the contents of those records. The regents’ policy is available for review online at http://onestop.umn.edu/registrar/Gradesgradereporting/privacy.html, at 200 Fraser Hall, Minneapolis, and at records offices on other campuses of the University. Questions may be directed to the Office of the Registrar, 200 Fraser Hall (612-624-1111).

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1208 Kirby Drive
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or call 218-726-6000.