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# PROFESSIONAL BULLETIN

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The Virginia Commonwealth University bulletins are published yearly for each of the student populations served by the institution. The Professional Bulletin contains information about university policies, course descriptions and academic requirements for the programs offered to students enrolled in first-professional programs.

Visit our **FAQ page** for additional information.

## ABOUT VCU

Located in the heart of Richmond, the capital of Virginia since 1779, Virginia Commonwealth University serves an integral role in the economic health of the city and the state, educating the current and future work force, reaching out to the community, advancing research and enhancing patient care.

VCU was founded in 1838 as the medical department of Hampden-Sydney College, becoming the Medical College of Virginia in 1854. In 1968, the General Assembly merged MCV with the Richmond Professional Institute, founded in 1917, to create Virginia Commonwealth University.

Today, VCU offers comprehensive undergraduate, master's, doctoral and professional programs and encompasses one of the largest academic health centers in the nation. With \$270.3 million in externally funded research awards for the 2015 fiscal year, VCU is one of only 28 public universities in the country with an academic medical center to be designated as a research university with very high research activity as well as a Community Engaged Institution, both by the Carnegie Foundation. Its centers and institutes of excellence support the university's research mission and involve faculty from multiple disciplines in the arts, public policy, biotechnology and health care discoveries.

VCU enrolls more than 31,000 students in 225 degree and certificate programs in the arts, sciences and humanities. Seventy-nine of the programs are unique in Virginia, many of them crossing the disciplines of VCU's 13 schools and one college. VCU has a full-time instructional faculty of more than 2,200 who are nationally and internationally recognized for excellence in the arts, business, education, engineering, the humanities, the life sciences, social work and all the health care professions. With more than 21,000 employees, VCU and the VCU Health System also have a significant impact on Central Virginia's economy.

Building on the foundation of VCU's nationally ranked academic programs and academic medical center, research and scholarly productivity, and engagement with the communities it serves, the university's strategic plan, Quest for Distinction, launches a new vision for VCU: to elevate its stature and become the nation's top urban, public research university. This focused plan capitalizes on the outstanding assets of the VCU experience and truly distinguishes VCU as a major research university committed to academic quality and student success at all levels.

Quest for Distinction also embodies VCU's commitment to human health through the VCU Medical Center, which includes the university's health sciences schools and offers state-of-the-art care in more than 200 specialty areas, many of national and international note, including organ transplantation, head and spinal cord trauma, burn healing and cancer treatment.

VCU and the VCU Health System have been honored with prestigious national and international recognition for top-quality graduate, professional and medical-care programs, reflecting a commitment to be among America's top research universities focused on student learning.

## Administration

VCU administration provides leadership and organizational structure for the university, overseeing its goals and mission. Refer to each unit's

website (<http://atoz.vcu.edu/administration>) for a current listing of administrators.

## Deans

Deans provide leadership for their respective school or college. Refer to each unit's website (<http://atoz.vcu.edu/academic+departments/organizations>) for a current listing of its deans, departmental chairs and program heads.

## Accreditation

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master's, doctoral and first professional degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097; telephone: (404) 679-4500. Note: The Commission is to be contacted **only** if there is evidence that appears to support an institution's significant noncompliance with a requirement or standard.

## Academic program accreditation

See the college/schools for detailed information about program accreditation.

## Specialized program accreditation or certification

### Campus Police

Police Department  
International Association of Campus Law Enforcement Administrators

Police Academy  
Certified by the Virginia Department of Criminal Justice Services

### Division of Student Affairs

University Counseling Services  
American Psychological Association

Student Health Services  
Joint Commission on Accreditation of Health Care Organizations

### Hospital accreditation

VCU Health System  
Joint Commission on Accreditation of Healthcare Organizations

## Mission statement

As the premier urban, public research university in Virginia, VCU's mission is to advance knowledge and student success through its commitments to:

- An engaged, learner-centered environment that fosters inquiry, discovery and innovation in a global setting
- Research that expands the boundaries of new knowledge and creative expression and promotes translational applications to improve human health
- Interdisciplinary collaborations that bring new perspectives to complex problems and mobilize creative energies that advance innovation and solve global challenges
- Health care that strives to preserve and restore health for all people, to seek the cause and cure of diseases through groundbreaking research, and to educate those who serve humanity

- Diversity that provides a climate of inclusion, a dedication to addressing disparities wherever they exist, and an opportunity to explore and create in an environment of trust
- Sustainable, university-community partnerships that enhance the educational, economic and cultural vitality of the communities VCU serves in Virginia and around the world

## Vision statement

VCU will be a premier urban, public research university distinguished by its commitment to:

- The intellectual and academic success of a diverse student body
- Research and discovery that advances knowledge, inspires creativity and improves human health
- The global engagement of students, faculty and staff that transforms lives and communities

## Core values

1. **Accountability** – committing to the efficient and transparent stewardship of our resources to achieve institutional excellence
2. **Achievement** – ensuring distinction in learning, research and scholarly pursuits, service, and patient care
3. **Collaboration** – fostering collegiality and cooperation to advance learning, entrepreneurship and inquiry
4. **Freedom** – striving for intellectual truth with responsibility and civility, respecting the dignity of all individuals
5. **Innovation** – cultivating discovery, creativity, originality, inventiveness and talent
6. **Service** – engaging in the application of learning and discovery to improve the human condition and support the public good at home and abroad
7. **Diversity** – ensuring a climate of trust, honesty and integrity where all people are valued and differences are recognized as an asset
8. **Integrity** – adhering to the highest standards of honesty, respect and professional and scholarly ethics

## Oak Ridge Associate Universities Consortium

Since 1963, students and faculty have benefited from VCU's membership in Oak Ridge Associated Universities, a consortium of 115 colleges and universities and a contractor for the U.S. Department of Energy. ORAU works with its member institutions to help students and faculty gain access to federal research facilities, to keep its members informed about opportunities for scholarship and research appointments and to organize research alliances among its members.

Faculty, graduate students and undergraduate students may access a wide range of opportunities for study and research, including the Lindau-Nobel Laureates and Powe Junior Faculty programs. Many of these programs are designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines.

For more information about ORAU and its programs, contact:

- Francis L. Macrina, Ph.D., ORAU Councilor for VCU  
(804) 827-2262
- Monnie E. Champion, ORAU Corporate Secretary

(865) 576-2206

Or you may visit the ORAU website at [orau.org](http://www.orau.org) (<http://www.orau.org>).

## VCU Health System Authority

In April 1996, Gov. George Allen signed legislation that established the Medical College of Virginia Hospitals Authority. Effective July 1, 1997, the operations, employees and obligations of MCV Hospitals (formerly a division of VCU) were transferred to the Authority. Three years later, in connection with legislation signed by Gov. James Gilmore, the MCV Hospitals Authority became the Virginia Commonwealth University Health System Authority. The clinical activities of MCV Hospitals, MCV Physicians and the VCU School of Medicine are now coordinated and integrated by and through VCU Health.

The VCU Health System Authority is charged by statute with the missions of operating MCV Hospitals as teaching hospitals for the benefit of the health sciences schools of VCU, providing high quality patient care and providing a site for medical and biomedical research, all of which missions are required to be performed in close affiliation with the Office of the Vice President for Health Sciences. VCU's vice president for health sciences also serves as the CEO of the VCU Health System Authority, and five VCU faculty physicians serve as members of the VCU Health board of directors.

## Board of Visitors

The Board of Visitors is the voting body of Virginia Commonwealth University. Each year, the governor of Virginia appoints members. Refer to Office of the President's website (<http://www.president.vcu.edu/board>) for a current listing of board members.

## Determination of student classification for in-state tuition purposes

Tuition is determined by the number of credit hours a student is taking, the student's residency classification, course of study and classification level. For in-state tuition benefits, the student must comply with Section 23-7.4 of the Code of Virginia (<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+23-7.4>).

All applicants to VCU who wish to be considered for in-state tuition rates as Virginia residents must submit the Application for Virginia In-state Tuition Rates. This application is a part of the admissions packet and the nondegree-seeking student enrollment package. The residency determination of the applicant is conveyed at the time of admission as a degree-seeking student or nondegree-seeking student.

New and continuing students initially classified as non-Virginians for tuition purposes may request a review of the initial residency determination by completing an Application for Change of Domicile available from the Office of Records and Registration (online). The student must present clear and convincing evidence that he or she is not residing in the state primarily to attend school. The application deadline is the end of the add/drop period of the semester, and it is the responsibility of the student to establish or to file an appeal to change his/her residency classification prior to the start of classes for the semester under consideration. In accordance with the Code of Virginia, applications received after the deadline must be considered for the next semester. Submit completed applications with documentation to the university residency appeals officer. Processing may require four to

six weeks; therefore it is strongly recommended that applications be submitted earlier than the stated deadline.

Our service to students is limited to assuring that they understand the procedures for appealing and that they have access to information about the relevant sections of the Code of Virginia. We provide information about the steps of our process and access to the applicable sections of the statute and the associated guidelines. We provide qualified staff to review the appeals and make decisions based on the information students provide. What we cannot do is provide advisement to students as to how to present their case for review; we cannot become the student's advocate since we must make the decision.

Students approved for a change to in-state status for tuition purposes are notified by mail with copies of their approval letters sent to the Office of Financial Aid and the Office of Student Accounting. Students denied this status are also notified by mail. The denial letter informs the student of procedures for appeal of this decision, to include filing an appeal with the University Residency Appeals Committee. Students who submit fraudulent applications, falsify documentation or conceal information will be subject to reclassification, payment of all nonresident fees owed and university discipline.

Please note that a student with in-state status for tuition purposes who exceeds 125 percent of the credit hours needed to complete his program will be assessed a tuition surcharge.

## Rights of students under the Family Educational Rights and Privacy Act

Pursuant to a federal statute enacted to protect the privacy rights of students (Family Educational Rights and Privacy Act of 1974 [FERPA], as amended, enacted as Section 438 of the General Education Provisions Act), eligible students of Virginia Commonwealth University are permitted to inspect and review education records of which the student is the subject. A statement of university policy concerning inspection and disclosure of education records has been formulated in compliance with the federal statute. Copies of the policy also are available from the Office of Records and Registration or on the Web at [rar.vcu.edu/registration/familyed.html](http://rar.vcu.edu/registration/familyed.html) (<http://rar.vcu.edu/registration/familyed.html>).

Generally, the act provides that no personally identifiable information will be disclosed without the student's consent, except for directory information and information to other school officials with a legitimate educational interest. When personally identifiable information, other than directory information, is disclosed, a record will be maintained of these disclosures. This record also is available for inspection and review by the student.

If an eligible student feels that his or her education record is inaccurate, misleading or otherwise in violation of the student's privacy or other rights, the student may request an amendment to the record.

Should the university fail to comply with the requirements of the act, the student has the right to file a complaint with the Family Policy Compliance Office, U.S. Department of Education, 400 Maryland Ave., S.W., Washington, D.C. 20202-5901.

## Parental Notification Amendment

Amendments to FERPA signed into federal law in fall 1998 specifically allow notification to the parents or guardians of students under the age of 21 who violate any law or university rule regarding use or possession

of alcohol or other controlled substance. The Virginia Attorney General's Task Force on Drinking by College Students also recommended such notification in its 1998 report.

In accordance with these documents, a parental notification procedure has been included in the VCU Drug Free Schools and Workplace Policy.

## Consumer information

The federal Higher Education Opportunity Act of 2008 requires that institutions of higher education disclose certain consumer information to current students, prospective students, current employees and/or prospective employees. This consumer information (<http://www.opds.vcu.edu/consumer-info>) for VCU is maintained by the Office of Planning and Decision Support.

# FIRST-PROFESSIONAL STUDY

Virginia Commonwealth University currently offers first-professional programs leading to the Doctor of Dental Surgery, Doctor of Medicine and Doctor of Pharmacy degrees.

## Professional programs admissions

### General admission requirements and procedures

The Board of Visitors, the administration and the faculty of VCU are committed to a policy of equal opportunity in education and employment without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability.

### Admission requirements

Admission requirements, entrance examinations and application materials for first professional programs may be obtained by contacting the appropriate admissions office. Other detailed information including financial aid opportunities, procedures for international students, regulations and procedures, academic, curricula, and degree requirements are included in the section describing each professional program.

### Admission through VCU's Honors College

VCU undergraduate students who are members of The Honors College may apply to The Honors College Guaranteed Admission Program either before matriculation at VCU or early in their undergraduate studies. (The specific deadline for applying is set by the Program.) Honors students in the Guaranteed Admission Program may enter the professional program to which they have applied, provided they satisfy all of the requirements of the GA Program.

To be accepted in The Honors College GA Program, a student must submit a completed application form with at least two letters of recommendation and be accepted by the university, by The Honors College and by the admissions committee of the program the student wishes to enter. The admissions committee may require an interview. Final notification of guaranteed admission is made by The Honors College. For additional information, refer to the Honors College section of the Undergraduate Bulletin.

All of VCU's first-professional programs participate in The Honors College Guaranteed Admission Program.

### International students

International students should refer to the appropriate professional program's chapter for information regarding international student admission guidelines.

### Professional programs financial aid

Current information on financial aid programs, policies and procedures are available on the VCU website at [finaid.vcu.edu](http://finaid.vcu.edu) (<http://finaid.vcu.edu>).

To obtain printed materials or additional information, call or visit the appropriate financial aid office.

#### Schools of Allied Health Professions, Nursing and Pharmacy

VMI Building, Room 334  
1000 East Marshall Street  
P.O. Box 980277

Richmond, Virginia 23298-0277  
(804) 828-2702  
Fax (804) 827-0060  
Email: [nabdul@vcu.edu](mailto:nabdul@vcu.edu)

#### School of Dentistry

Lyons Building, Room 309  
520 North 12th Street  
P.O. Box 980566  
Richmond, Virginia 23298-0566  
(804) 828-9953  
Fax (804) 828-6072  
Email: [kdgillia@vcu.edu](mailto:kdgillia@vcu.edu)

#### School of Medicine

McGlothlin Medical Education Center  
1201 East Marshall Street  
P.O. Box 980565  
Richmond, Virginia 23298-0565  
(804) 828-4006  
Fax (804) 827-5555  
Email: [hking1@vcu.edu](mailto:hking1@vcu.edu)

## eServices – online records access

Students are encouraged to use the eServices website, a password-protected service for viewing VCU student records online, to check the status of their financial aid application and award package. Students also may register for classes, print bills and more. Access the eServices website at [eservices.vcu.edu](http://eservices.vcu.edu) (<http://www.eservices.vcu.edu>).

## E-mail – official method of communication

Students are required to obtain an official VCU student e-mail account within one week of the beginning of their first semester of enrollment. Students are responsible for reading in a timely fashion university-related communications sent to their official VCU student e-mail account. The Office of Financial Aid uses e-mail to provide financial aid information, to request documentation to support financial aid application data and to provide financial aid application status and award information. Information on how to set up an account is available online at [ts.vcu.edu/askit/email](http://ts.vcu.edu/askit/email) (<http://www.ts.vcu.edu/askit/email>).

## Identification requirements

Students must provide picture identification, preferably a VCUCard, for in-person access to financial aid records. For the student's protection, information provided over the telephone and e-mail may be limited if the financial aid staff member is not confident of the student's identity.

## Eligibility for financial aid

Most students are eligible for some type of financial aid regardless of family financial circumstances. Basically, to receive aid from any of the federal or state student aid programs, students must:

- Submit a Free Application for Federal Student Aid (FAFSA) or Renewal FAFSA designating VCU (school code 003735) to receive FAFSA results.
- Demonstrate financial need, except for some loan programs.

- Have a high school diploma or a General Education Development (GED) Certificate.
- Be enrolled or accepted for enrollment to an eligible degree or certificate program.
- Be enrolled at least half time (five or more graduate credit hours).
- Be a U.S. citizen or eligible noncitizen.
- Have a valid Social Security number (unless from the Republic of the Marshall Islands, the Federated States of Micronesia or the Republic of Palau).
- Meet Satisfactory Academic Progress (SAP) standards as defined by the VCU Office of Financial Aid (the full VCU SAP policy is available online at [finaid.vcu.edu/progress](http://finaid.vcu.edu/progress) (<http://finaid.vcu.edu/progress>)).
- Certify that federal and state financial aid will be used for educational purposes only.
- Not be in default on a federal student loan and not owe money on a federal student grant.
- Comply with the Selective Service registration, if required.
- Not be convicted under federal or state law of sale or possession of illegal drugs.

Detailed information can be found in the federal Student Guide, available in print form from the VCU Office of Financial Aid or electronically at [studentaid.ed.gov/students/publications/student\\_guide](http://studentaid.ed.gov/students/publications/student_guide) ([http://studentaid.ed.gov/students/publications/student\\_guide](http://studentaid.ed.gov/students/publications/student_guide)) and on the VCU Office of Financial Aid website. (<http://finaid.vcu.edu>)

## Applying for financial aid

The financial aid application process for the academic year begins Jan. 1. All students are encouraged to complete and submit the FAFSA as soon as possible after Jan. 1, designating VCU (school code 003735) to receive the results. In order to reduce problems, errors and omissions on the FAFSA, students are encouraged to apply electronically using FAFSA on the Web (available online at [fafsa.ed.gov](http://www.fafsa.ed.gov) (<http://www.fafsa.ed.gov>)). Once the FAFSA is filed, the federal processor will send the student a Student Aid Report (SAR) or electronic SAR Acknowledgement, and also will electronically send the information to the VCU Office of Financial Aid, if VCU was listed as a school to receive the data. If additional information is needed to complete processing of the application, the VCU Office of Financial Aid will send the student a request for additional information. Responding promptly to such requests will ensure timely processing of the application. Once the review of FAFSA data has been completed, the Office of Financial Aid will send the student a Financial Aid Notification.

Please note that health profession students (dentistry, medicine, nursing or pharmacy) must provide both student and parental information on the FAFSA to apply and receive consideration for Title VII grants and loans from the Department of Health and Human Services.

## Priority filing dates

The VCU Office of Financial Aid recommends electronically filing the FAFSA by March 1\*. Students should complete the FAFSA using data from their completed tax returns. If necessary, they may use estimated tax return data in order to meet the VCU priority filing date but should be prepared to submit a copy of their completed tax returns and W2 forms to VCU as soon as possible. Students will receive their Financial Aid Notification after their FAFSA application data has been verified. If students have not applied for financial aid in a timely manner, they may want to participate in the VCU Installment Payment Plan, which budgets each semester's bill over four payments. Information about

this plan can be found on the Student Accounting Department's website ([enrollment.vcu.edu/accounting/installment-payment-plan](http://enrollment.vcu.edu/accounting/installment-payment-plan) (<http://enrollment.vcu.edu/accounting/installment-payment-plan>)).

## Summer studies

Limited financial aid may be available during the summer semester. Students applying for the summer semester must file the FAFSA for the academic year preceeding the summer semester. Students also should complete a VCU summer aid application, available on the Financial Aid website (<http://finaid.vcu.edu>).

Students interested in financial aid for the summer semester should obtain a VCU Summer Studies Schedule of Classes (<http://www.pubapps.vcu.edu/scheduleofclasses>) (available in March) for more details.

## Study abroad

Financial assistance is available to eligible students enrolled in approved study abroad programs. All study abroad programs must be coordinated through the Office of International Education at (804) 828-8471. Students should work with a financial aid counselor to coordinate aid for their study abroad program. Information about financial aid and study abroad is available online at [global.vcu.edu/abroad/students/funding](http://global.vcu.edu/abroad/students/funding) (<http://global.vcu.edu/abroad/students/funding>).

## Quality assurance

To ensure that information provided on the FAFSA is accurate, a student's application may be selected for review at any time during an enrollment period, and the student will be requested to provide documentation that supports the information. By signing the FAFSA, the student (and the student's parents or spouse, if applicable) agreed to furnish such documentation. If the documentation is not provided when requested, financial aid awards will be canceled and any funds already disbursed may need to be repaid.

## University bill

The Student Accounting Department issues online bills for tuition, fees and other university charges. When financial aid awards (grants, scholarships and loans) are not enough to pay university charges, the remaining balance must be paid from personal funds, credit card or the VCU Installment Payment Plan. Federal work-study awards will not be deducted from university charges because those funds are paid directly to the student, based on hours worked. Any outstanding balance owed will prevent a student from registering for courses and receiving official transcripts. Students who fail to pay their balance on time may be assessed a late payment fee and have a financial hold placed on their account. If the balance remains outstanding after the semester ends, their account may be referred to the VCU Collection Unit at which time collection costs will be assessed.

## Special circumstances

Financial aid eligibility decisions are made using federal, state and institutional regulations and policies. Students may appeal their calculated contribution if special circumstances warrant a review. Reasons for an appeal might include one of the following documented unusual circumstances:

- Loss or reduction of employment earnings.



- Disability or death of parent or spouse.
- Separation or divorce.
- Loss or reduction of untaxed income.
- Losses due to a natural disaster.
- Unusually high educational program costs.
- Unusual medical expenses.
- Dependent and child care expenses.

Any financial aid staff member can advise a student about the procedures on how to file an appeal.

## Federal financial aid refund policy

Students who receive federal Title IV grant or loan assistance and withdraw from VCU before completing 60 percent of the semester (as measured in calendar days) must have their eligibility recalculated based on the federal Return of Title IV Funds formula. This federal formula specifies that a student's financial aid eligibility must be recalculated based on the aid the student has "earned" (based on the number of days that the student was enrolled or attending VCU prior to withdrawal). Any unearned aid (for the period of enrollment that the student did not complete from the date of withdrawal to the end of the semester) must be returned to the appropriate Title IV programs from which the student was awarded.

For VCU students who withdraw prior to completing 60 percent of the semester, they will have to return or repay all or a portion of the aid funds that had been disbursed to their VCU account. As a result, students who withdraw prior to completing 60 percent of the semester may be responsible for all or a portion of their tuition/fee bill that was previously paid by financial aid sources.

If a student does not officially withdraw from all classes but fails to earn a passing grade in at least one course, federal aid regulations require that the student be considered "unofficially withdrawn," unless it can be documented that the student completed the enrollment period. Unofficial withdrawals require a Title IV refund calculation at the midpoint of the enrollment period. The reduction of federal aid will create a balance due to the university that must be repaid.

## Satisfactory Academic Progress

To be eligible to receive financial aid at VCU, students must make Satisfactory Academic Progress (SAP). SAP is a combination of qualitative and quantitative components and is measured by completion rate. The completion rate is the number of credit hours earned divided by the number of credit hours attempted. All students must successfully complete at least 67 percent of all credit hours attempted (withdrawals, incompletes and repeated courses also are considered attempted credit hours).

The Office of Financial Aid will perform a periodic SAP review for students who receive or apply for financial aid. The reviews are typically performed at the end of the spring semester and must be completed at least once per academic year.

Students will be alerted with warning letters, whenever possible, to provide them with notice that their financial aid may be in danger of being suspended. When students fail to meet SAP requirements, they will receive suspension letters indicating that they are ineligible to receive further financial aid. Students whose eligibility for financial aid has been

suspended may submit an appeal if mitigating circumstances prevented the student from maintaining SAP.

For more detailed information about the VCU Satisfactory Academic Progress (<http://finaid.vcu.edu/progress>) policy, visit the Office of Financial Aid website.

## Types of financial aid

There are three basic types of financial aid: loans, grants and work-study. Each type has different features and advantages.

### Loans

In terms of total dollars available, long-term federal loan programs provide the most dollars. Federal loans must be repaid after the grace period and/or deferment periods have expired. Students must generally remain enrolled at least half-time (five credit hours for graduate students). Multiple repayment plans may be available for most federal loans. Selected loan programs include:

- Federal Direct Loan (unsubsidized)
- Health Professions Student Loan
- Loan for Disadvantaged Students
- Nursing Student Loan
- Primary Care Loan

Borrowers in the Federal Direct Loan Program are required to complete loan counseling prior to the first disbursement if you have not previously received a Direct Loan, Federal Family Education Loan or Supplemental Loans to Students Loan. To complete entrance counseling for the Federal Direct Loan Program, go to [finaid.vcu.edu/assistance/loans/entrance.html](http://finaid.vcu.edu/assistance/loans/entrance.html) (<http://www.finaid.vcu.edu/assistance/loans/entrance.html>).

You will also be required to complete exit counseling before you graduate, withdraw or drop below half-time status. To complete exit counseling for the Federal Direct Loan program, go to [finaid.vcu.edu/assistance/loans/exit.html](http://finaid.vcu.edu/assistance/loans/exit.html) (<http://www.finaid.vcu.edu/assistance/loans/exit.html>).

### Grants

Contact individual academic departments for information about grant or scholarship programs.

### Work-study

Work-study is a form of financial aid that pays wages for work performed through employment. Work-study positions are located on campus and in approved off-campus locations. Hourly wages will vary depending on skills and experience. Job listings are posted to the University Career Services (<http://www.careers.vcu.edu>)' website. When interviewing for work-study positions, students should take copies of their Financial Aid Notifications to show prospective employers.

## Veteran and reservist educational benefits and programs

Military Student Services is located in Harris Hall on the Monroe Park Campus. Detailed information about eligibility for the programs listed below is available on the Military Student Services website (<http://www.militaryservices.vcu.edu>). You also may contact the office to obtain printed material.

Military Student Services  
 Harris Hall, Room 3122  
 1015 Floyd Avenue  
 P.O. Box 842520  
 Richmond, Virginia 23284-2520  
 (804) 828-6563  
 Fax (804) 827-0096  
 E-mail: [militaryserv@vcu.edu](mailto:militaryserv@vcu.edu)  
 Web: [militaryservices.vcu.edu](http://www.militaryservices.vcu.edu) (<http://www.militaryservices.vcu.edu>)

## Available programs

For details on any of these programs, please visit the Veteran's Affairs page of the Division of Student Affairs and Enrollment Services website using the link provided above.

- Montgomery – GI Bill Active Duty (Chapter 30)
- Vocational Rehabilitation (Voc Rehab, Chapter 31)
- Veterans Education Assistance Program (VEAP, Chapter 32)
- Post 9-11 GI Bill (Chapter 33)
- Survivors' and Dependents Educational Assistance Program (DEA, Chapter 35)
- Montgomery – GI Bill Selected Reserves (Chapter 1606)
- Reserve Education Assistance Program/Reap (Chapter 1607)
- Tutorial Assistance Program
- VA Work-Study Program
- Virginia Military Survivors and Dependents Education Program
- Post 9-11 – Active Duty (Chapter 33)/Yellow Ribbon Program
- Yellow Ribbon Program
- Transferability of Benefit

## Eligibility requirements

Eligible veterans/spouses/dependents must comply with the following requirements to receive educational benefits as students:

1. The veteran/spouse/dependent must be accepted into a degree or certificate program or be matriculating as a nondegree-seeking student for only two semesters before having to declare a major.
2. The veteran/spouse/dependent must request certification by completing and submitting VCU's VA Education Assistance form after obtaining approval via signature of their academic adviser and registering for courses each semester and each summer session from the Veterans Affairs Office.
3. The veteran/spouse/dependent is eligible to use benefits for only those courses taken toward a degree, certificate program or as prerequisite courses (only two semesters).
4. The veteran/spouse/dependent is not eligible to use benefits for courses taken on an audit basis, or if eliminating a course previously taken and paid for by the VA to remove a punitive grade not counted in GPA calculations via VCU's historical repeat option. The repeated course(s) will be paid for by the VA but the student will incur a debt to the VA for the course(s) eliminated from the student's GPA. The VA does not pay for courses that earn no credit.
5. The veteran/spouse/dependent is responsible for ensuring that transcripts are evaluated for transfer credits to be accepted by VCU. Students must submit this information to the Veterans Affairs Office for transmittal to the Veteran's Administration Regional Office.
6. The Veterans Affairs Office must be notified by the student/veteran/spouse/dependent if they change, add, drop or withdraw from

courses originally approved by the student/ veteran/spouse/ dependent's academic adviser and certified by VCU's Veterans Affairs coordinator/certifying official.

## Professional programs tuition and student fees

Students must pay all applicable tuition, room, board and other fees when due, as described in this section. Students who fail to pay these charges on time may be assessed a late payment fee. The university reserves the right to revise or alter all tuition and fees, regulations pertaining to student fees, and collection procedures at any time. In addition to expenses billed by the university, students should make allowances for books, clothing, supplies, travel and other out-of-pocket costs when figuring their total yearly expenses at the university.

## Student financial responsibilities

Students who enroll:

- Are responsible for full payment of tuition and fees generated from their registration.
- Are responsible for full payment of all room, board and other applicable miscellaneous charges.
- Are responsible for keeping a current mailing address on file with Enrollment Services. Refunds and tax forms are not issued to students with inactive mailing addresses.
- Are responsible for establishing an official VCU e-mail address and reading their e-mail on a regular basis, since e-mail will be used to notify students when their invoices are available in the payment and billing site. Paper bills are not sent to enrolled students. Failure to acknowledge and review the electronic invoice does not relieve responsibility for timely payments. Other important notifications are also sent to the official VCU e-mail address.

Tuition and fees are categorized and described on the Student Accounting (<http://www.enrollment.vcu.edu/accounting>) website.

The university reserves the right to revise or alter all fees, regulations pertaining to student fees and fee collection procedures at any time.

## Tuition and fee schedule

Tuition and fees are categorized and described on the Student Accounting website at [enrollment.vcu.edu/accounting](http://enrollment.vcu.edu/accounting) (<http://www.enrollment.vcu.edu/accounting>). Questions regarding tuition and fees may be directed to the Student Accounting Department at (804) 828-2228, or by emailing [stuacctg@vcu.edu](mailto:stuacctg@vcu.edu). The university reserves the right to revise or alter all fees, regulations pertaining to student fees and fee collection procedures at any time.

## University fee

This fee is used by the university to support student facilities, campus development, intercollegiate athletics and other programs. Full-time students pay a flat-rate university fee each semester. Part-time students pay this fee on a per-credit basis.

## Student activity fee

This fee is used to support social, cultural and other student activities on the Monroe Park Campus. These activities include concerts, plays, student organizations and publications. Full-time students on the Monroe

Park Campus pay a flat-rate student activity fee, while part-time students on the same campus pay this fee on a per-credit basis. Students on the MCV Campus are not charged this fee.

### **Student Government Association fee**

This fee is used to support social, cultural and other student activities on the MCV Campus. The fee is charged to all full-time and part-time MCV Campus students. Monroe Park Campus students are not charged this fee.

### **Student health fee**

All full-time students on both campuses must pay the student health fee. Part-time students may participate in the University Student Health Services on an elective basis by paying the student health fee. The University Student Health Services offers unlimited office visits for acute and chronic ailments, after-hours phone advice for an urgent medical problem and most laboratory tests associated with acute illnesses ordered by the USHS staff, among other services. The fee does not cover accidental injury, emergency room visits or hospitalization. More specific information as to what is covered and not covered by the fee is available on the USHS website (<http://www.students.vcu.edu/health/about/eligibility-and-charges>).

### **Technology fee**

The technology fee is charged to all undergraduate, graduate and professional students in all programs. Full-time students pay a flat rate. Part-time students pay a per-credit-hour rate. The fee is used to provide for students' technological needs and to support university-wide technological initiatives.

### **Off-campus fees**

The university fee, the student activity fee, the student government association fee (except School of Social Work) and the student health fee are not charged to students taking off-campus classes.

### **Capital outlay fee**

This fee is charged to all full-time and part-time non-resident, on-campus students. The fee is mandated by the General Assembly to reimburse the State for debt service costs attributable to non-resident students related to the financing of buildings and equipment.

### **Online course fee**

The online course fee is charged for undergraduate and graduate online courses. The fee covers operational and personnel support to develop and maintain online courses.

### **Special fee charges**

Because of specialized programs, various schools and departments may charge each student additional fees to cover special materials, equipment breakage and other costs. For specific information about special fees, refer to the Student Accounting Department website or to the specific school or department section in this bulletin.

## **Student billing**

Students must pay all applicable tuition, fees, room and board when due. Students are notified at their official VCU email address when their bills are available on the billing and payment site. No paper bills are sent to enrolled students. Tuition and fees for preregistered students, along with charges for housing and dining plans where applicable, are due by the official start of each semester. After the registration period all other

students are sent a notification at their official VCU email address when their electronic bill has been issued and should pay by the payment due date indicated on the electronic invoice. Students who fail to pay these charges on time may be assessed a late payment fee. The university reserves the right to revise or alter all tuition and fees, regulations pertaining to student fees, and fee collection procedures at any time. In addition to expenses billed by the university, students should make allowances for books, clothing, supplies, travel and other out-of-pocket costs when figuring their total yearly expenses at the university.

The Installment Payment Plan assists students in meeting the cost of their higher education by offering a convenient payment option. The university-administered IPP is offered only during the fall and spring semesters. The plan distributes the cost of tuition, fees, housing and dining charges for a semester into four equal installments.

All students attending the university with current charges of \$100 or more are eligible to participate. All prior semester balances must be paid in full to be eligible.

Students who receive financial aid are also eligible for participation in the IPP. These students may deduct their aid to determine the net total due. If it is \$100 or more, the remaining amount may be paid in installments.

In some cases, a student may receive a financial aid refund, and then subsequent charges for the semester are added to the student's account. If the student has received a refund, he or she is ineligible to participate in the IPP unless the refund has been repaid to the university in full. The student must then pay the first installment and follow the instructions to enroll in the IPP.

There is a \$25 nonrefundable application fee payable with the first installment of each semester. Interest is not assessed on the outstanding balance; however, installments not paid by the payment due date are subject to a late payment penalty. Information about how to participate in the IPP is available online at [enrollment.vcu.edu/accounting/installment-payment-plan](http://enrollment.vcu.edu/accounting/installment-payment-plan) (<http://www.enrollment.vcu.edu/accounting/installment-payment-plan>).

## **Drop vs. withdraw**

Drop charges are removed to indicate that the student never attended the class. The student is not eligible to receive financial aid, and any financial aid already credited to the student's account based on the original course registration will be removed from the student's account, which may create a balance due to the university.

Withdraw results in the academic grade of W. Charges are assessed and adjusted according to the University Refund Policy. Students may owe a balance to the university.

## **Refund of tuition and fees**

The official university tuition and fees refund policy is applicable only for the fall and spring semesters. This table pertains to both complete withdrawals and reduced course loads for standard classes (excluding short/nonstandard courses). The policy is based on the weeks of the semester and not the class meeting days (if the semester begins on a Thursday, the first week of classes is from Thursday through the following Wednesday).

Refunds (reduction of charges) are calculated on a course-by-course, per-credit-hour basis, disregarding the full-time cap amounts and discounted tuition. Charges are recalculated based on the number of credit hours

in which the student remains enrolled in addition to the nonrefundable percentage portion of credit hours for the withdrawn course(s). Students who are enrolled and withdraw from courses may not receive a reduction in charges.

- Students dropping/withdrawing from courses through the first week of class will be entitled to a 100 percent refund of tuition and fees.
- Students withdrawing from courses through the second week of class may be entitled to an 80 percent refund of tuition and the university fee.
- Students withdrawing from courses through the third week of class may be entitled to a 60 percent refund of tuition and the university fee.
- Students withdrawing from courses through the fourth week of class may be entitled to a 40 percent refund of tuition and the university fee.
- Students withdrawing from courses after the fourth week of class are not entitled to receive a refund of tuition and fees.

The refund policy and deadlines of the English Language Program are different from the university's refund policy for academic courses. Details of the policy may be obtained from the English Language Program Office.

A full refund for holiday intersession will be granted if the course is dropped before 4:30 p.m. on the day of the first class meeting. Partial refunds are not granted.

A full refund for a short/nonstandard course's tuition and applicable fees will be granted if the course is dropped no later than the day following the first day of a given class. No refund of tuition and fees is given for withdrawals of short and non-standard courses. Students should contact their program administrator for withdrawals from non-standard classes that are longer than standard classes.

A full refund for summer tuition and applicable fees will be granted if the course is dropped no later than the day following the first day of a given class. (This policy also is applicable if the class does not meet on two consecutive days.) Students reducing their academic course loads to less than full-time (12 credits for undergraduates and nine credits for graduates) before the end of the last day to drop a course will be entitled to a refund of tuition and applicable fees reflecting the reduced course load. Partial refunds are not granted for the summer session.

Students who are financial aid recipients and withdraw from all courses prior to completing 60 percent of the semester are subject to the Federal Return of Title IV Funds Policy. For more details see Federal financial aid refund policy (p. 10).

Refunds will be computed based on the actual withdrawal date certified by the Office of Records and Registration. Refunds will not be made to students who do not attend classes and have not completed the required withdrawal procedure. Refund processing may take approximately two to three weeks. Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Student Accounting Department to the Refund Appeals Committee within three years.

Refer to the Residential Housing contract and Dining Services' "Terms and Conditions" for housing and dining services refunds.

Requests for refunds that are not generated from the overpayment of financial aid should be made in writing to: VCU Student Accounting Department, P.O. Box 843036, Richmond, VA 23284-3036. Refund request

forms are available at the Student Services Center, 1015 Floyd Ave. or 1000 E. Marshall St., Room 323, and on the Web at [enrollment.vcu.edu/accounting/forms](http://enrollment.vcu.edu/accounting/forms) (<http://www.enrollment.vcu.edu/accounting/forms>).

In accordance with credit card regulations, the university will refund any credit balance that may result on a student's account as the outcome of a credit card payment back to the credit card account. The remaining credit balance, if any, will be refunded to the student.

Students are responsible for paying any increase in charges that may occur after the generation of any refund.

## Outstanding charges

Students who fail to meet payments when due will be assessed late payment penalties and will be denied registration for future classes until they have paid all accrued amounts owed. Students with balances owed to the university will not be issued degrees, official transcripts of grades or graduate reports until all charges are paid in full.

Any communication disputing an amount owed, including an instrument tendered as full satisfaction of a debt, must be submitted to the Director of Student Accounting, Student Accounting Department, Virginia Commonwealth University, P.O. Box 843036, Richmond, VA 23284-3036.

Pursuant to Section 2.2-4805 et seq., of the Code of Virginia, and in accordance with rules and regulations promulgated by the State Comptroller and Attorney General of the commonwealth of Virginia, VCU will charge interest, costs and fees on all accounts past due.

VCU is participating in the Virginia Set-off Debt Collection Act of 1981. Under the provisions of this act, a Virginia individual income tax refund will be subject to the university's claim for unpaid balances of tuition and fees.

A student who pays a past due balance with a dishonored check may be subject to having his or her current and/or future registration cancelled. A charge of \$50 is levied for all dishonored checks.

## Military services tuition relief, refund and reinstatement guidelines

These guidelines apply to students whose service in the uniformed services (military) has necessitated their sudden withdrawal or prolonged absence from their enrollment at Virginia Commonwealth University and provides for the required re-enrollment of such students. Students are offered the following enrollment secession options:

1. Drop all courses before the end of the add/drop period and receive a full reduction of tuition and fee charges. Students residing in university housing and participating in a dining plan will be released from their housing and dining service contracts and will receive a prorated refund of these charges. Students will be asked to sign the drop request form with the director of military student services indicating that they are not receiving a financial aid refund. If the reduction of charges results in an overpayment on the account after any financial aid or third party awards have been reduced, the student will be issued a refund.

This option might best meet the needs of students who are called to active duty service during the first week of school and did not receive a financial aid refund check or direct deposit.

2. Receive a grade of Incomplete (IM – incomplete military) in one or all courses. Students residing in university housing will be released from their housing and dining service contracts and will receive a prorated refund of these charges. Students who chose to take a grade of IM will not have tuition and fees reduced for these courses because, upon receipt of an approved change of grade, credits will still be earned for the semester. Students will have 12 months from the date that they return from active service to complete the course work and earn a course grade. If a student received financial aid, the amount recovered to the financial aid accounts will follow the Federal Financial Aid Refund Policy.

This option might best meet the needs of students who have essentially completed all course work in a class for the semester, but have yet to turn in a final project, an exam or other materials. It should be agreed upon between the instructor and the student that the remaining course work can reasonably be completed during the 12-month period.

3. Accept administrative withdrawal (WM – withdrawn military) from all courses as of the effective date of the orders to active duty. If this option is elected, a full refund of all tuition, fees and prorated room and dining charges will be made. If a student received financial aid, the amount recovered to the financial aid accounts will follow the Federal Financial Aid Refund Policy. If the reductions of charges results in an overpayment on the account after any financial aid or third party awards have been reduced, the student will be issued a refund.

This option might best meet the needs of students who are called to national service in the middle of a semester and have not completed 75 percent of their class requirements. This option also might best meet the needs of students who are leaving the university during the first week of class and received a financial aid refund check or direct deposit as a result of their financial aid.

4. Students who have completed 75 percent of the course requirements at the time of military activation and, notwithstanding certain exceptions noted below, who meet requirements as determined and agreed upon by the faculty instructor and the student may receive full course credit.

Students may receive full course credit if 75 percent of course requirements have been completed, under certain circumstances. The instructor is responsible for determining what percentage of course requirements have been completed based on factors to include but not limited to contact time, examinations, projects, work experience and clinical experience. The awarding of full credit cannot be made where the incomplete requirements are essential components of the course or program required by law or regulatory bodies, required for competency in the work place, or required to complete licensure examinations.

## Leaving the university

To initiate this process, the student must provide the Office of Military Student Services with a copy of his or her active duty orders in addition to a printed copy of his or her course registration for that semester and indicate Option 1, 2, 3 or 4 for each course. If Option 4 is selected, the student must provide documentation from the instructor. The director of military student services will forward all documentation to the university registrar to take the appropriate enrollment action, post the appropriate grades and send a copy of the orders and a copy of the student course

request statement to the director of financial aid and the director of student accounting.

## Returning to the university

Students who withdrew from the university as a result of military deployment, mobilizations or duty changes are entitled to return without having to requalify for admission so long as the student (a) returns after a cumulative absence of no more than five years and (b) notifies the appropriate admissions office of the intent to return to the university not later than three years after the completion of military service obligation. The student may return to the university in the same program of study. With the consultation of an adviser, a comparable program of study may be chosen for discontinued programs.

## Tuition determination and student classification

Tuition is determined by the number of credit hours a student is taking, the student's residency classification, course of study and classification level.

### In-state residency

Eligibility for in-state tuition benefits is determined by Section 23-7.4 of the Code of Virginia. Refer to the Determination of student classification for in-state tuition purposes in the About VCU section of this bulletin for the complete code.

All applicants to VCU who want to be classified as Virginia residents must complete the Application for Virginia In-state Tuition Rates included in the graduate application. The residency determination of the applicant will be conveyed at the time of admission. New and continuing students initially classified as non-Virginians for tuition purposes may request a review of the initial residency determination by completing an Application for Change of Domicile available from the Office of Records and Registration (online). The student must present clear and convincing evidence that he or she is not residing in the state primarily to attend school. The application deadline is 30 days prior to the start of the semester, and it is the responsibility of the student to establish or to file an appeal to change his/her residency classification prior to the start of classes for the semester under consideration. In accordance with the Code of Virginia, applications received after the start of the semester must be considered for the next semester. Submit completed applications with documentation to the university residency appeals officer. Processing may require four to six weeks; therefore it is strongly recommended that applications be submitted earlier than the stated deadline.

Our service to students is limited to assuring that they understand the procedures for appealing and that they have access to information about the relevant sections of the Code of Virginia. We provide information about the steps of our process and access to the applicable sections of the statute and the associated guidelines. We provide qualified staff to review the appeals and make decisions based on the information students provide. What we cannot do is provide advisement to students as to how to present their case for review; we cannot become the student's advocate since we must make the decision.

Students approved for a change to in-state status for tuition purposes are notified by mail with copies of their approval letters sent to the Office of Financial Aid and the Student Accounting Department. Students denied this status also are notified by mail. The denial letter informs the student

of procedures for appeal of this decision, to include filing an appeal with the University Residency Appeals Committee. Students who submit fraudulent applications, falsify documentation or conceal information will be subject to reclassification, payment of all nonresident fees owed and university discipline.

Please note that a student with in-state status for tuition purposes who exceeds 125 percent of the credit hours needed to complete his program will be assessed a tuition surcharge.

## Professional programs general academic regulations

The bulletin of record for a professional student is the Professional Programs Bulletin in effect at the time of the student's official admission to the degree program (as specified in the student's official letter of admission). The effective bulletin contains the official requirements that the student must complete to earn the degree. A student who does not maintain continuous enrollment must reapply to the program and will be subject to the requirements of the bulletin in effect at the time of readmission. Exception to this policy must be approved by the student's dean or dean designee.

The university reserves the right to revoke any degree, certificate or other university recognition for cause. In addition, any time following the award of a degree, certificate or other university recognition, the university reserves the right to take appropriate action, including, but not limited to, the revocation of such degree, certificate or other university recognition, on the basis of academic misconduct discovered subsequent to, but which occurred prior to, the awarding of the degree, certificate or other university recognition. More specifically, when an action that constitutes a violation of the VCU Honor System leads to a finding that invalidates a major piece of work required for a degree, certificate or other university recognition so that the validity of the degree, certificate or other university recognition is jeopardized, the student or former student will be subject to a sanction that may include (a) rejection of a thesis, dissertation or other work, (b) revocation of a certification or other university recognition or (c) revocation of a degree.

## Course interpretation

A single number listing for a course, such as MGMT 648, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as THEA 603, 604 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as APPM 575-576, are designated as continuous courses and consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first. The university reserves the right to withdraw any course or program.

## Course listings

### Identification of symbols

I	A course offered in the first semester
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II	A course offered in the second semester
I, II	A course offered in each semester
I and II	A course continued through two semesters
S	A course offered in summer sessions

## Course numbering

All schools and programs within VCU use the following course numbering system. All course numbers consist of three digits (XXX). The first digit relates to the course level as follows:

### 0XX noncredit courses

Courses offered for students to make up deficiencies in previous training or to improve certain basic skills.

### 1XX and 2XX undergraduate, lower level

Courses with these numbers are offered primarily for undergraduate students and may not be used for graduate credit, although graduate students may be required to register for courses at this level to gain a necessary foundation for other course work.

### 3XX and 4XX undergraduate, upper level

Courses offered for advanced undergraduates and that usually constitute the major portion of specific program work leading to the baccalaureate degree. On occasion, graduate students will be advised by their graduate advisers to enroll in prerequisite 4XX courses. Graduate programs can require that 400-level courses be taken, but credit hours in these courses cannot count toward the graduate degree or in the graduate GPA (effective fall 2004).

### 5XX introductory graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system. Departments may limit the number of 500-level courses applicable to a graduate degree program. Advanced undergraduates may enroll in these courses for credit with consent of the offering department. Credit is applicable toward only one degree unless a student is admitted to a course of study that allows a defined number of shared courses.

### 5XX professional graduate courses

First year, first professional (medicine, dentistry, pharmacy and physical therapy) courses normally open to students enrolled in the M.D., D.D.S., Pharm.D. and D.P.T. programs. Certain courses of this group may be designated by the department and approved by the University Graduate Council for graduate credit.

### 6XX, 7XX and 8XX graduate courses

Graduate students enroll for credit in these courses through the normal graduate advising system. Credit is applicable toward only one degree unless a student is admitted to a course of study that allows a defined number of shared courses.

### 6XX and 7XX professional graduate courses

6XX Second year, first professional (medicine, dentistry, pharmacy and physical therapy [second and third year]) courses normally open only to students enrolled in the M.D., D.D.S., Pharm.D. and D.P.T. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

7XX Third and fourth year, first professional (medicine, dentistry and pharmacy) courses normally open only to students enrolled in the M.D.,

D.D.S. and Pharm.D. programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

## Grade review procedure

If a student thinks that a grade is inaccurate, the situation should be discussed with the faculty member. This will allow the faculty member to explain how the final grade was determined and, if an error is detected, to submit a change of grade.

If the student still thinks that the grade was assigned unfairly, a written appeal should be submitted to the department chair. Upon receipt of the written appeal, the department chair shall provide the student with a copy and explanation of the Grade Review Procedure and shall ensure that the requirements of the Grade Review Procedure are followed.

If the department chair is unable to resolve the complaint, then the dean of the school in which the course was offered will form a grade review committee as described in the Grade Review Procedure policy and will submit its decision to the dean of the school. The decision communicated by the dean of the school in which the program resides is the final decision and will be distributed to the student, faculty member(s) and department chair.

In cases concerning grades awarded for the fall semester, the written appeal must be submitted to the department chair no later than 30 calendar days after the beginning of the following spring semester. In cases concerning grades awarded for the spring semester or summer sessions, the written appeal must be submitted no later than 30 calendar days after the beginning of the following fall semester.

## Grading system

Work quality is measured by the four-point grade system with the following equivalents:

Grade symbol and meaning	Grade-point value per semester credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0
P/F (Pass/Fail)	0.0
PR	0.0
S/U (Satisfactory/Unsatisfactory)	0.0

All other grades are temporary, carry no credit and are not used in the computation of a GPA. Refer to the following pages for an explanation of the use of the grades of satisfactory and unsatisfactory in relation to thesis/dissertation/research classes.

The number of grade points earned is computed by multiplying the grade-point value for the letter grade by the number of semester credits for the course. As an example, a student receiving an A (i.e., four grade points) in a three-credit course receives 12 grade points.

The grades of accepted transfer courses are not included in the computation of the VCU GPA. Graduate students are not designated as special honors graduates (i.e., cum laude, magna cum laude, summa cum laude) on transcripts or diplomas upon completion of their programs.

No graduate student shall be awarded degree credit for remedial work. Students advised to take any level course for remedial work should be notified in writing that the course credit shall not apply to the degree they are pursuing. Other bodies may rule later, should the student wish to apply the credit to some other degree.

## Grade of audit (AU)

Class size permitting, students may register for courses on an audit basis. A student may register for audit only during add/drop and late registration periods as a new registration and not as a change from credit to audit. Auditing a course means a student enrolls in a course, but does not receive academic credit upon completion of the course. A student who registers on an audit basis is subject to attendance regulations of that class and may be administratively withdrawn by an instructor for a violation of class requirements for audit students, before or after the normal eight-week withdrawal deadline. A student who registers for audit may be subject to other course requirements at the discretion of the instructor. Audit students are charged the regular rate of tuition and fees. An audit course is counted as part of the student's semester load in terms of classification as a full-time student. Courses taken for audit, however, do not satisfy minimum enrollment requirements for students receiving graduate teaching or research assistantships, graduate fellowships, or university graduate scholarships.

## Grade of continued (CO)

The grade of CO may be assigned as an interim grade for those courses that run over several grade reporting periods. The CO indicates that the course is not expected to be completed in a single semester and that students must reregister for the course. Upon completion of the course, a final grade will be assigned to the current semester, and the previous CO grade(s) will remain. This grade may be assigned only in courses approved for such grading.

## Grade of incomplete (I)

If because of circumstances beyond their control, students are unable to meet all the requirements of a course by the end of a semester, the mark of incomplete (I) may be given. The awarding of a mark of I requires an understanding between instructor and student as to when and how the course will be completed. This understanding must be recorded on an Incomplete Grade Assignment Form that is submitted instead of a final course grade. The maximum time limit for submission of all course work necessary for removal of an incomplete is the end of the last day of classes of the next semester following the semester in which the incomplete was incurred (i.e., an incomplete awarded in the fall semester must be converted by the last day of classes in the spring semester, and an incomplete awarded in the spring or summer session must be converted by the last day of classes in the fall semester). At that time, an unremoved grade of incomplete is changed automatically to a failing grade. Individual departments and schools may have more stringent time limits. An extension of the time limit is possible, but must be approved, prior to the expiration date stated above, by the instructor and the dean of the school through which the course is offered. Written approval indicating the new time limit must be filed with the dean.

## Grade of pass (P)

This grade is awarded for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of P will not be computed in the GPA.

## Grade of progress (PR)

The mark of PR may be assigned only in courses approved for such grading. Unlike the mark of I, PR will not automatically be changed to a failing grade at the end of the succeeding semester.

## Grades of satisfactory (S), unsatisfactory (U) or fail (F) in research, thesis and dissertation courses

All research, thesis, and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as S, U or F.

There is no limit to the number of these credits a student may take while pursuing completion of the degree as long as the student receives a grade of S for each credit. An individual department may terminate a student who does not progress satisfactorily as indicated by a U grade in research, thesis/dissertation/project course work. A student who receives a final grade of F in the thesis or dissertation will be terminated from the graduate program.

## Grade of withdrawn (W)

The grade of W indicates that the student has officially withdrawn from a course or has been administratively withdrawn for nonattendance. No student who has officially withdrawn from a course or who has been administratively withdrawn for nonattendance may attend subsequent meetings of the course.

## Immunization requirements

The commonwealth of Virginia and VCU require that all full-time students supply validated immunization records to University Student Health Services. This requirement must be completed prior to registering for second semester. Failure to meet these requirements will result in a hold placed on the student's second semester registration. The hold can be removed only upon receipt of the students documented records.

The immunization record must be completed fully and accurately. There are two ways a student may fulfill all requirements:

1. Students may have their health care provider transfer the information from their medical records and sign the form.  
or
2. Students may complete the top demographic section of the Certificate of Immunization and attach a copy of official documents from undergraduate institutions, military records, high school or other records that fulfill all requirements to the Certificate of Immunization.

A copy of the Certificate of Immunization, which details the necessary immunizations, is available on the student health website at [students.vcu.edu/health/immunizations](http://students.vcu.edu/health/immunizations) (<http://www.students.vcu.edu/health/immunizations>).

Students who cannot provide documented evidence of all required immunizations must see their health care provider, health department or Student Health Services to complete all requirements.

## MCV Campus programs

Warning, probation and suspension are defined by the program of study. Consult program adviser for further details.

## University rules and procedures

Each member of the VCU community has certain responsibilities, rights and privileges. These are stated in some detail in the VCU Rules and Procedures, and all students are responsible for being familiar with provisions of this document. The rules and procedures are printed in the VCU Insider and also are available at the Office of Judicial Affairs and Academic Integrity. This document also provides for the process whereby disciplinary action, including separation from VCU, may be taken against a member of the university community as a result of behavior that is in violation of the prohibited conduct as stated in the VCU Rules and Procedures.

Students at VCU have a right to appeal actions of an academic nature. If such action involves a course grade, the Grade Review Procedures should be followed. If such action involves computing, the Computer Ethics Policy should be followed. If such action involves dishonesty, the Academic Integrity Policy for Monroe Park Campus students should be followed.

All students enrolled in courses on the MCV Campus are subject to the VCU Honor System. Copies of the Honor Code are available in Office of Records and Registration, Sanger Hall, Room 1-055, and the Office of the Associate Dean of Student Affairs, MCV Campus, Hunton Student Center, Room 205.

In addition to those standards of conduct described in VCU Rules and Procedures and the MCV Campus Honor Code, which applies to all students enrolled on the MCV Campus, a student enrolled at the university may be dismissed from the school in which enrolled for failure to meet prescribed academic program requirements. Students appealing termination from a graduate program/department should first pursue appeals at the department and/or the school level. After receiving a decision from the department and/or school, a student has the option of filing an appeal with the dean.

VCU seeks to foster insight, imagination, creativity, resourcefulness, diligence, honesty and responsibility as well as the education of the men and women enrolled in its graduate programs. Such an enterprise can take place only where the highest standards of academic integrity exist.

Academic dishonesty is the giving, taking or presenting of information or material by students with the intent of unethically or fraudulently aiding themselves or others on any work that is to be considered in the determination of a grade or the completion of academic requirements. Students in doubt regarding any matter related to the standards of academic integrity in a given course or on a given assignment should consult with the faculty member responsible for the course before presenting the work.

## Withdrawal policies

### Leave of absence

Students may request a leave of absence from a program through written appeal to their advisers. The adviser will forward the request, following departmental governance procedures, along with a recommendation to the dean, who will respond for the university. Students who do not register for courses for more than one calendar year and who have not been granted a leave of absence must reapply for admission to VCU and to the degree program.



## Withdrawal from the university

To withdraw officially from VCU, a student must submit a complete Official Withdrawal Form to Records and Registration before the end of the 10th week of classes. The Official Withdrawal Form is obtained from Harris Hall, Room 1100, or Sanger Hall, Room 1-055. Failure to complete this form may result in the assignment of failing grades in all or some of the courses. The student's permanent academic record will indicate a grade of withdrawn ("W") for all courses in which the student was enrolled.

## Health-related withdrawals

While students are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the university.

- Some schools require a statement from a physician indicating the nature and severity of the condition, when a student should stop attending classes, and the estimated date of return to school.
- In the event that a student's health problem poses a danger to the student, to patients or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated above, administrative withdrawal of the student may be made by the dean upon consultation with the appropriate faculty and a qualified physician.
- Because curricular and course content changes may occur and a student's progress toward a degree may be affected adversely because of an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If there is a delay in return beyond the allotted time period without written consent of the dean, the student may petition for return with advanced standing.
- Some schools require that prior to return to school, the student must submit to the dean a statement from a physician. This statement should document that the condition that necessitated the withdrawal has been corrected to a point where the student can complete successfully all curriculum requirements with reasonable accommodation including classroom, laboratory, clinical and fieldwork experience.

# SCHOOL OF DENTISTRY

The School of Dentistry was created in 1893 when the University College of Medicine opened with a dental department as one of its original divisions. The Medical College of Virginia inaugurated a dental education program in 1897, and in 1913 the two schools were merged to form the MCV School of Dentistry.

In 1968, by an act of the Virginia General Assembly, MCV was merged with Richmond Professional Institute to form Virginia Commonwealth University. The School of Dentistry is located on VCU's MCV Campus.

The facilities of the School of Dentistry are housed in the Wood Memorial, Lyons and Perkinson buildings and contain clinical facilities, research facilities, classrooms, student laboratories, departmental offices and a computer-learning laboratory.

The school provides opportunities for selected, qualified individuals to study dentistry under the most favorable conditions and in accordance with the standards established by the Commission on Dental Accreditation of the American Dental Association.

The degree of Doctor of Dental Surgery (D.D.S.) is awarded to graduates of the school's professional program and the Bachelor of Science degree to graduates of the Dental Hygiene Program within the Department of Oral Health Promotion and Community Outreach.

Graduates of the advanced dental education programs in endodontics, orthodontics, pediatric dentistry and periodontics are awarded the Master of Science in Dentistry degree.

## Administration

520 North 12th Street  
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**David C. Sarrett, D.M.D.**  
Dean

**Richard D. Archer, D.D.S.**  
Associate dean, Clinical Dental Education

**B. Ellen Byrne, D.D.S., Ph.D.**  
Senior associate dean

**Laurie C. Carter, D.D.S., Ph.D.**  
Director, Advanced Dental Education Programs

**Riki Gottlieb, D.M.D.**  
Director, Admissions

**Michael Healy, D.D.S.**  
Senior associate dean, Student Services

**Rebecca Pousson**  
Executive associate dean

**Harvey A. Schenkein, D.D.S., Ph.D.**  
Assistant dean, Research

## Accreditation

### Dental hygiene (bachelor's degree)

Commission on Dental Accreditation

### Dentistry (D.D.S.)

Commission on Dental Accreditation

### Advanced Dental Education Programs\*

Commission on Dental Accreditation

\*(includes endodontics, oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontics and Advanced Education in General Dentistry)

## Mission

The mission of the VCU School of Dentistry:

- **Education** of highly qualified dental professionals
- **Research** that advances the understanding of oral health, disease and effective treatment
- **Service** to the community
- Improved oral and general **health** of our patients and the general population

## Philips Institute for Oral Health Research

**Iain M. Morgan, Ph.D.**  
Director

The mission of the Philips Institute for Oral Health Research is to serve the university and the commonwealth of Virginia as a center of educational and research excellence focused on infectious, neoplastic and genetic diseases of the oral cavity, head and neck.

## Dentistry, Doctor of Dental Surgery (D.D.S.)

The Doctor of Dental Surgery is a four-year program in general dentistry leading to the D.D.S. degree and emphasizing study in three broad areas: basic sciences, clinical sciences and social sciences. The academic year begins in July and extends through May.

## Student learning outcomes

As a result of successfully completing the pre-doctoral dental curriculum the new dentist will be competent in the following areas:

### A. Diagnosis and treatment planning

#### 1. Diagnosis

Assess and diagnose diseases and abnormalities of the oral cavity and head/neck region in pediatric, adult and geriatric patients. Obtain, assess and properly utilize information relative to systemic health of patients, initiating consultations and referrals to other health care professionals as appropriate.

#### 2. Treatment planning

Develop a comprehensive evidence-based treatment and/or referral plan(s), based on etiologic factors, current oral disease risk analyses, standards-of-care strategies and biomedical and clinical scientific knowledge. Develop evidence-based treatment plan options to present to patient involving them in the health care decision-making process and obtain informed consent.

## B. Oral health management

### 3. Emergency care

Demonstrate the ability to manage dental and in-office medical emergencies.

### 4. Anxiety and pain management

Utilize pharmacological therapies and behavioral techniques to prevent or manage pain and anxiety.

### 5. Oral health education

Educate patients, parents and/or caregivers with individualized instructions for improving and maintaining good oral health, monitoring and re-evaluating as necessary.

### 6. Oral function

Provide treatment and/or referrals as appropriate with the goal of achieving physiologic form, oral function and health to include the following areas:

- a. prevention and management of dental caries
- b. restoration of teeth
- c. replacement of teeth including fixed, removable and dental implant prosthodontic therapies
- d. prevention and management of periodontal diseases
- e. prevention and management of pulpal and periradicular diseases
- f. prevention and management of oral mucosal and osseous disorders
- g. management of uncomplicated oral surgical procedures
- h. recognition and management of malocclusion and space maintenance needs

### 7. Outcomes

Demonstrate the ability to self-assess competency and evaluate the outcomes of patient-centered dental health care.

### 8. Community

Demonstrate the ability to engage in community-based disease prevention and health promotion activities.

## C. Practice and profession

### 9. Ethics

Apply concepts of professional ethics, health care principles and adhere to the ADA Principles of Ethics and Code of Professional Conduct.

### 10. Communication and behavioral principles

Demonstrate appropriate interpersonal skills, communication skills, psychosocial principles and behavioral principles in caring for a diverse population of patients and collaborating with other members of the health care team.

### 11. Critical thinking

Integrate and synthesize information to advance knowledge and skills through critical evaluation of biomedical literature and the application of new science to patient care.

### 12. Risk principles

Apply principles of risk management, quality improvement, infection control and radiation safety to patient care.

### 13. Business and legal/regulatory matters

Apply the business principles and programs used in the administration of a dental practice while complying with all regulations, policies and protocols that relate to health, safety and the law.

## Admission requirements

**Riki Gottlieb, D.M.D.**

Director of admissions  
(804) 628-4400

A minimum of 90 semester hours (or equivalent) in an accredited college or university is required and must be documented. Most acceptances have a bachelor's degree and/or four years of college. Required courses are general biology, biochemistry, general chemistry, organic chemistry, physics and English. Laboratory experiences are required for those courses where applicable. Biology courses should emphasize zoology rather than botany. Courses in general microbiology or bacteriology, animal physiology, immunology, histology, genetics, embryology, the behavioral sciences, and courses involving psychomotor skills are strongly recommended. Academic credits presented by an applicant must be acceptable for credit toward a degree in the institution in which the courses are taken. Individuals interested in pursuing a career in dentistry should schedule an appointment in the Office of Admissions for individual guidance.

In order to successfully complete the dental curriculum at VCU, students must meet non-academic criteria for motor, sensory and observation, communication, cognitive and behavioral abilities in the document Technical Standards for Dental Education Programs for VCU School of Dentistry. Accordingly, applicants may be required to prove their proficiency in American English via standardized tests and interviews. An applicant may consider the option of postponing matriculation until such time that he/she can meet these requirements.

Participation in the Dental Admission Test of the American Dental Association is required. It is recommended that this test be taken the year before the intended matriculation year. Applicants are encouraged to take the examination more than one time, and the best set of scores is used as the official set. Information about the Dental Admission Test can be obtained from: a) your pre-health advising office of your undergraduate school, b) VCU, School of Dentistry Office of Admissions or c) the American Dental Association, Department of Testing

website: [ada.org/en/education-careers/dental-admission-test](http://www.ada.org/en/education-careers/dental-admission-test) (<http://www.ada.org/en/education-careers/dental-admission-test>).

## Selection factors

VCU is a state-supported, public university and gives admission preference to state residents. All applicants are evaluated by uniform criteria without regard to age, race, color, national origin, gender, religion, sexual orientation, veteran's status, political affiliation or disability. Students are accepted by the Admissions Committee on the basis of excellence of pre dental education, DAT scores, recommendations, experiences in dentistry and results of personal interviews with members of the committee. The interview process is standardized and designed to determine motivation, knowledge of and interest in the dental profession, and to afford the applicant an opportunity to provide additional information pertaining to his/her application. Selection occurs on a rolling admissions basis, and once the class is complete, an alternate list is created. Members of minority groups underrepresented in dentistry are especially encouraged to apply. Each year a certain number of students who are not accepted into the freshman class are invited to take selected courses with this class. Their performance in these courses plays a vital role in their being considered for the following year's admissions process.

## Admission with advanced standing

The School of Dentistry will consider applicants for admission with advanced standing on an individual basis depending upon positions available and qualifications of the applicant. Pre-admission evaluation of skills and knowledge by performance testing is required prior to admission consideration.

## Application procedures

The School of Dentistry participates in the American Association of Dental Schools Application Service. All applicants are required to submit credentials through this service. Reapplicants must also reapply through the application service. Application forms can be obtained from AADSAS, 1400 K St. N.W., Suite 1100, Washington, D.C. 20005 [email to [aadsas.appl@adea.org](mailto:aadsas.appl@adea.org) or call (202) 289-7204], pre dental advisers in colleges and universities, and the Office of Admissions, School of Dentistry, Virginia Commonwealth University, P.O. Box 980566, Richmond, VA 23298-0566.

Application to the School of Dentistry can be made through AADSAS on or after June 1 and must be received by AADSAS no later than Nov. 1 of the year preceding intended matriculation.

AADSAS compiles academic records and other pertinent information and forwards these with the application to the School of Dentistry. Qualified applicants are then requested to submit additional information, such as the VCU supplemental application. The application fee is \$80.

Applicants will be notified of decisions according to guidelines established by the American Association of Dental Schools. The first acceptances are sent out on Dec. 1; subsequent acceptances are sent out in early spring. In order to reserve a position in the class, a nonrefundable tuition deposit of \$800 is required.

A letter of acceptance offers the candidate a position in the class entering for the session cited. Receipt by the Office of Admissions of the \$800 nonrefundable tuition deposit within the prescribed period reserves the position in the class. Failure to reserve a position with the \$800 nonrefundable deposit results in loss of that position, which is then offered to another candidate. The act of matriculation also implies a willingness on the part of the student to comply with university rules and

regulations, to take an interest in maintaining the ideals of the institution and to conduct himself/herself in a manner befitting a member of the dental profession.

For more information please visit the School of Dentistry website at [dentistry.vcu.edu](http://www.dentistry.vcu.edu) (<http://www.dentistry.vcu.edu>).

## Curriculum

The curriculum in the dental school is organized into a competency-based, four-year program leading to the Doctor of Dental Surgery (D.D.S.) degree. The academic year begins in July and extends through June. The program emphasizes study in three broad areas: biomedical sciences, clinical sciences and behavioral sciences.

The biomedical sciences include the in-depth study of human anatomy, genetics, material science, microbiology, pathology, pharmacology and physiology.

The clinical sciences prepare the student for the actual practice of dentistry and provide exposure to the various specialties in dentistry.

The behavioral sciences cover such topics as dental health needs, the system of health care delivery, practice management, professional ethics and behavioral factors.

Laboratory and clinical experiences are offered throughout the four years to develop the skills and judgment vital to the practice of general dentistry.

In general, courses offered as part of the curriculum in dentistry are not available to other students in the university. Exceptions may be granted by the dean of the School of Dentistry to students enrolled in graduate degree programs upon written request of the department chair in which the student is seeking a degree.

Freshman year			
Semester 1			Hours
ANAT	501	Dental Gross Anatomy	6.5
ANAT	503	Dental Neuroanatomy	1
DENS	503	Introduction to Behavioral Science in Dentistry	1
DENS	515	Clinical Skills I	1
GENP	511	Dental Anatomy	4
GENP	512	Operative Dentistry Lecture <sup>1</sup>	
IPEC	501	Foundations of Interprofessional Practice	1
MICR	513	Infection and Immunity (Dentistry)	4
PERI	525	Diagnosis of Periodontal Diseases	1
Term Hours:			19.5
Semester 2			
ANAT	502	Microscopic Anatomy (Dentistry)	5
DENS	513	Foundations of Effective Interpersonal Skills During Patient Interactions I	1.5
DENS	516	Clinical Skills II	3.5
DENS	524	Evidence-based Dentistry and Critical Thinking I	1
GENP	512	Operative Dentistry Lecture	4
GENP	513	Operative Dentistry Laboratory	4.5
GENP	514	Fundamentals of Occlusion	2
PATH	601	General Pathology (Dentistry)	6

PERI 526	Etiology and Pathogenesis of Periodontal Diseases	1.5
PHIS 502	Physiology and Pathophysiology (Dentistry)	5
Term Hours:		34

**Sophomore year****Semester 1**

DENS 603	Foundations of Effective Interpersonal Skills During Patient Interactions II <sup>1</sup>	
DENS 619	Evidence-based Dentistry and Critical Thinking II	1
DENS 621	Dental Occlusion	2
DENS 625	Clinical Skills III	5
ENDO 622	Principles of Endodontics <sup>1</sup>	1
GENP 620	Cariology	2
ORPT 621	Dental Radiology	1
ORPT 622	Oral Pathology <sup>1</sup>	
ORTH 623	Orthodontics Lecture	2
PERI 627	Non-Surgical Periodontal Therapy	1.5
PHTX 609	General Pharmacology and Pain Control <sup>1</sup>	
PROS 622	Preclinical Fixed Prosthodontics <sup>1</sup>	
PROS 623	Preclinical Fixed Prosthodontics Laboratory <sup>1</sup>	
PROS 624	Preclinical Removable Prosthodontics <sup>1</sup>	
Term Hours:		15.5

**Semester 2**

DENS 603	Foundations of Effective Interpersonal Skills During Patient Interactions II	1
DENS 611	Introduction to Professionalism, Ethics and Ethical Decision-making	1
DENS 623	Clinical Skills IV	7
DENS 628	Evidence-based Patient Care I	1
DENS 642	Fundamentals of Treatment Planning	1
ENDO 622	Principles of Endodontics	1.5
HGEN 631	Advanced Dental Genetics	1
ORPT 622	Oral Pathology	3
ORSG 622	Introduction to Oral Surgery	1
PEDD 622	INTRO-PEDIATRIC DENTISTRY	2
PHTX 609	General Pharmacology and Pain Control	4
PROS 622	Preclinical Fixed Prosthodontics	2
PROS 623	Preclinical Fixed Prosthodontics Laboratory	4
PROS 624	Preclinical Removable Prosthodontics	6
PROS 626	Clinical Principles of Dental Implantology Lecture	1
PROS 628	Clinical Principles of Implantology Lab	1
Term Hours:		37.5

**Junior year****Semester 1**

DENS 703	Advanced Interpersonal Communications I <sup>1</sup>	
DENS 730	Dental Practice Management III	1
DENS 735	Patient Management and Professional Conduct	2.5

ENDO 731	Endodontic Therapy	1
ENDO 739	Clinical Endodontics III <sup>1</sup>	
GENP 739	Clinical Operative III <sup>1</sup>	
ORPT 737	Radiology Rotation <sup>1</sup>	
ORSG 731	Medical Management of Emergency Care Dental Patients	2
ORSG 739	Clinical Oral Surgery III <sup>1</sup>	
ORTH 739	CLINICAL ORTHO 3 <sup>1</sup>	1
PEDD 733	Advanced Pediatric Dentistry	1
PEDD 739	Clinical Pediatric Dentistry III <sup>1</sup>	
PERI 733	Surgical Periodontal Therapy	1
PERI 739	Clinical Periodontics III <sup>1</sup>	
PHTX 611	Dental Pharmacology and Pain Control	2
PROS 731	Complete Denture Prosthodontics	1.5
PROS 735	Removable Prosthodontics Diagnosis and Treatment	1.5
PROS 739	Clinical Fixed Prosthodontics III <sup>1</sup>	
PROS 739	Clinical Fixed Prosthodontics III <sup>1</sup>	
Term Hours:		14.5

**Semester 2**

DENS 703	Advanced Interpersonal Communications I	1
DENS 735	Patient Management and Professional Conduct	2.5
ENDO 739	Clinical Endodontics III	1.5
GENP 739	Clinical Operative III	5
GENP 742	Treatment Planning Seminar	2
ORPT 732	Clinical Oral Pathology and Oral Medicine	1
ORPT 737	Radiology Rotation <sup>2</sup>	
ORSG 733	Principles of Oral and Maxillofacial Surgery	1.5
ORSG 739	Clinical Oral Surgery III	2.5
ORTH 733	Orthodontic Therapy	1
ORTH 739	CLINICAL ORTHO 3	1
PEDD 730	Special Care Dentistry	1
PEDD 739	Clinical Pediatric Dentistry III	1
PERI 739	Clinical Periodontics III	5
PROS 739	Clinical Fixed Prosthodontics III	3.5
PROS 739	Clinical Fixed Prosthodontics III	2
Term Hours:		31.5

**Senior year****Semester 1**

DENS 713	Advanced Interpersonal Communications II <sup>1</sup>	
DENS 740	Dental Practice Management IV	1
DENS 745	Patient Management and Professional Conduct	2.5

DENS 752	Clinical General Practice Dentistry Yearlong course; 7-8 clinic sessions per week. 14.5 credits. Enrollment restricted to fourth-year dental students. Course encompasses all clinical patient care instruction within the School of Dentistry group practices. This course is designed to enhance the student's clinical experience in patient management, treatment planning, utilization of dental auxiliaries, consultation with other health care professionals and referral to appropriate dental specialists. <sup>1</sup>	12
DENS 762	Clinical Service-learning <sup>1</sup>	
ORPT 747	Radiology Rotation (continuation of ORPT 737)	1.5
ORSG 749	Clinical Oral Surgery IV <sup>1</sup>	
PEDD 749	Clinical Pediatric Dentistry IV <sup>1</sup>	
Term Hours:		17

**Semester 2**

DENS 713	Advanced Interpersonal Communications II	1
DENS 745	Patient Management and Professional Conduct	2.5
DENS 752	Clinical General Practice Dentistry Yearlong course; 7-8 clinic sessions per week. 14.5 credits. Enrollment restricted to fourth-year dental students. Course encompasses all clinical patient care instruction within the School of Dentistry group practices. This course is designed to enhance the student's clinical experience in patient management, treatment planning, utilization of dental auxiliaries, consultation with other health care professionals and referral to appropriate dental specialists.	12
DENS 762	Clinical Service-learning	6
ORSG 749	Clinical Oral Surgery IV	2
PEDD 749	Clinical Pediatric Dentistry IV	2
Term Hours:		25.5
Total Hours:		195

<sup>1</sup> Continues into second semester.

<sup>2</sup> Completed first semester senior year.

## Combined Master of Science (M.S.)/ Doctor of Philosophy (Ph.D.) and Doctor of Dental Surgery (D.D.S.)

In cooperation with the School of Dentistry, students in dentistry with an interest in academic and research careers are afforded the opportunity to undergo advanced degree training while in dental school or residency. Admission of students enrolled in the School of Dentistry to combined degree programs is processed through the Office of Graduate Education of the School of Medicine by established procedures. The Dental Aptitude Test may be accepted in lieu of the GRE as an admission requirement. No application fee is required of students already regularly enrolled as degree-seeking graduate students at the university.

The requirements for a combined professional school/graduate school degree in basic health sciences are equivalent to those required of students seeking a graduate degree alone and are determined by the individual departments.

### Academic performance evaluation

The faculty of the VCU School of Dentistry has the responsibility for evaluating the student's academic performance. It is incumbent on the course directors or their designees to specify, at the time that courses first convene, the criteria to be used in student assessment and the standards by which they will be judged.

The VCU School of Dentistry Guidelines for the Evaluation of Student Performance and Academic Status are distributed to all students at the beginning of their study. They are available upon request from the Office of Academic Affairs, School of Dentistry.

# SCHOOL OF MEDICINE

The School of Medicine of the then Medical College of Virginia opened on November 5, 1838, as the medical department of Hampden-Sydney College. Full-time clinical faculty members were first appointed in 1928, and improved facilities became available between 1936 and 1941 with the completion of the 600-bed West Hospital, A. D. Williams Clinic and Hunton Hall dormitory, located on the current site of the Main Hospital building. Growth in faculty students and facilities continued after World War II, leading to the development of today's academic health center.

Hospital facilities on the MCV Campus include both in-patient and out-patient facilities. MCV Hospitals of the VCU Health System is licensed for 902 beds. In addition, the hospital at the McGuire Veterans Affairs Medical Center (600 beds) provides excellent patient care, training and research opportunities for the School of Medicine through its affiliation programs.

In the School of Medicine, advanced degree programs are coordinated through the Office of the Associate Dean for Graduate Education, who acts for the dean on all issues related to administration of advanced degree programs. Each advanced-degree program is represented by a faculty member who serves as director for graduate programs. Directors are appointed either by the chair of the department offering graduate degrees or, in the case of interdisciplinary programs, by the dean in consultation with the chairs of participating departments. The directors of graduate programs act on behalf of the programs and hold the responsibility and authority to represent the respective department(s) and their faculty to the school.

## Administration

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**Jerome F. Strauss III, M.D., Ph.D.**  
Executive vice president for medical affairs (VCU Health) and dean

**Vacant**  
Senior associate dean for research and research training

**Julie Beales, M.D.**  
Associate dean for veterans affairs

**Lelia Brinegar, Ed.D.**  
Assistant dean for curriculum

**Samantha Buery-Joyner, M.D.**  
Assistant dean for student affairs – Inova Campus

**Teresa Carter, Ed.D.**  
Associate dean for professional instructions and faculty development

**Pemra Cetin**  
Assistant dean for student affairs and financial aid

**Craig E. Cheifetz, M.D.**  
Associate dean for medical education – Inova Campus

**Jan F. Chlebowski, Ph.D.**  
Associate dean for graduate education

**Ralph Ron Clark III, M.D.**  
Associate dean for clinical activities

**PonJola Coney, M.D.**  
Senior associate dean for faculty affairs

**Louis De Felice, Ph.D.**  
Assistant dean for advanced degree administration

**Susan DiGiovanni, M.D.**  
Interim senior associate dean for medical education and student affairs and assistant dean for pre-clinical medical education

**Alicia Freedy, M.D.**  
Assistant dean for curriculum – Inova Campus

**Thomas Holland**  
Associate dean for alumni relations and development

**Paul E. Mazmanian, Ph.D.**  
Associate dean for assessment and evaluation studies

**Jose Munoz, M.D.**  
Interim Associate dean for patient safety and quality care

**Mary Alice O'Donnell, Ph.D.**  
Associate dean for graduate medical education

**John Pellock, M.D.**  
Senior associate dean for professional education programs

**Paul Peterson**  
Assistant dean for administration

**Michael Ryan, M.D.**  
Assistant dean for clinical medical education

**Joy Sanders**  
Assistant dean for development and alumni affairs

**Vacant**  
Senior associate dean for finance and administration

**Constance Tucker, Ph.D.**  
Assistant dean for faculty development

**John Ward, M.D.**  
Senior associate dean for clinical affairs

**Michelle Whitehurst-Cook, M.D.**  
Associate dean for admissions

**Christopher Woleben, M.D.**  
Associate dean for student affairs

## Accreditation

### Genetic counseling (master's degree)

American Board of Genetic Counseling

### Medical physics

Commission on Accreditation of Medical Physics Educational Programs

## Medicine (M.D.)

Liaison Committee on Medical Education

## Public health (master's degree)

Council on Education in Public Health

## Mission statement

The mission of the VCU School of Medicine is to provide preeminent education to physicians and scientists in order to improve the quality of health care for humanity. Through innovative, scholarly activity and a diverse educational context, the school seeks to create and apply new knowledge, and to provide and continuously improve systems of medical and science education. Furthermore, the mission includes the development of more effective health care practices to address the needs of diverse populations and to provide distinguished leadership in the advancement of medicine and science.

The primary aim of the School of Medicine is to provide an academic environment appropriate for the education of its students, including undergraduate medical students, advanced-degree (graduate) students and graduate physician house officers, as well as continuing education directed toward the needs of practicing physicians. In the classroom, laboratory, clinic and hospital, the faculty and students are brought together in teaching-learning experiences that promote scientific scholarship and personal growth in knowledge and professional skills applicable to careers in a diverse workplace environment.

The School of Medicine and its faculty have vested responsibilities for the advancement of knowledge through research and for service to the community through application of skills in biomedical knowledge, health care leadership and patient care. Therefore, the school shares with teaching the interdependent and almost inseparable objectives of research and service.

The School of Medicine is located on the MCV Campus of Virginia Commonwealth University.

For comprehensive information on the School of Medicine departments, programs and faculty, please go to the school website at [medschool.vcu.edu](http://www.medschool.vcu.edu) (<http://www.medschool.vcu.edu>).

## School of Medicine core competencies and objectives

**Professionalism:** The ability to understand and demonstrate the nature of professional and ethical behavior in the act of medical care. This includes respect, responsibility, accountability, excellence, honor, integrity, altruism, leadership, cultural competency, compassion, maintenance of professional boundaries and confidentiality.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Provide compassionate care to patients with respect for their privacy and dignity
- Display honesty, integrity and responsibility in all educational settings and in interactions with patients, their families and colleagues
- Consistently advocate for the patient's best interest
- Practice ethical decision-making

- Be accountable to the patient, society and the profession through a commitment to excellence and ongoing professional development
- Respond appropriately to the conflicts of interest inherent in the various financial and organizational arrangements within the practice of medicine
- Participate as an active member of the learning community and facilitate the learning of peers and other health care professionals
- Describe the psychological and physical risks and stressors of the practice of medicine
- Identify possible impairments in function and practice techniques for harm reduction

**Patient engagement and communication (interpersonal and communication skills):** The ability to engage and communicate with patients, their families and professional associates, using interpersonal skills to build relationships for information gathering, guidance, education, support and collaboration.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Create and sustain therapeutic and ethically sound relationships with patients and their families
- Employ effective oral and written communication skills to elicit and convey information while building rapport with patients, their families and professional associates
- Build collaborative relationships across both educational and clinical environments with patients, their families and professional associates
- Engage in shared decision-making with patients and their families or individuals designated to fulfill this responsibility for the patient
- Educate and counsel patients regarding basic lifestyle changes and disease prevention
- Conduct patient handover communications to other providers which are effective, efficient and maximize patient safety

**Application of scientific knowledge and method (medical knowledge):** The ability to discuss the biomedical, epidemiological and social-behavioral aspects of clinical science and apply this knowledge to patient care.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Use the scientific method to analyze basic, translational and clinical research
- Describe the molecular basis for the functions of organs and systems in health and disease
- Describe, apply and integrate the normal and pathologic structure and function of each organ system of the body
- Describe, apply and integrate the ways in which organ systems are affected by the various causative mechanisms of disease
- Recognize the clinical, laboratory, radiographic and pathologic manifestations of disease
- Describe, apply and integrate the scientific basis of disease prevention and treatment, including intended and unintended effects
- Apply evidence-based practice in defining and treating disease and when evaluating the efficacy of traditional and nontraditional therapies



- Appraise the impact of social-behavioral factors on health maintenance, causation of disease and therapeutic outcomes

**Patient care:** The ability to provide patient care that is appropriate and effective for the treatment of health problems and the promotion of health.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Obtain a complete history and perform a comprehensive physical/mental status examination in an organized fashion without supervision
- Utilize a focused history and physical and mental status examination to obtain relevant clinical information in a prioritized, organized and efficient manner
- Utilize alternative sources (i.e. family members, other health care providers, etc.) to obtain a medical history when necessary
- Recognize patients with immediate life-threatening or serious conditions that require critical care and outline an initial course of management
- Discuss with and provide to patients and their families information and counseling aimed at disease management, prevention and wellness
- Identify the epidemiology of common conditions within a defined population and apply systematic approaches to help reduce the incidence and prevalence of these conditions
- Describe the indications, risks, limitations, complications and interpretation of commonly used diagnostic tests
- Perform routine procedures competently and identify the indications, risks, limitations, justifications, complications and interpretations of these procedures
- Construct appropriate assessments, differential diagnoses and treatment plans for patients across the spectrum of medical presentations
- Gather, interpret and apply ongoing relevant clinical information in the care of patients
- Select appropriate tests for detecting patients at risk for specific diseases and determine strategies for responding appropriately
- Utilize information technology to gather patient data, support patient care decisions and educate patients and their families
- Enter and discuss safe and appropriate orders for patients using written form as well as the electronic medical record
- Compose prescriptions in verbal, written and electronic formats using accepted standards
- Obtain informed consent for interventions, tests and/or procedures which they order and/or perform

**Putting care in practical context (systems-based practice):** The ability to provide clinical care within the practical context of a patient's age, gender, personal values, family, health literacy, culture, religion and social and economic circumstances. This goal includes consideration of relevant ethical, moral and legal perspectives, patient advocacy, public health concerns, and resources and limitations of the health care system.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Obtain patient histories including information about patients' culture and other factors that may influence the appropriate course of care

- Perform culturally sensitive physical exams
- Identify cultural barriers that are perceived by patients as impacting health and health care
- Develop plans of care that take into account pertinent cultural attributes of patients and address barriers perceived by patients
- Compare and contrast various approaches to the organization, financing and delivery of health care
- Demonstrate understanding of the legal framework within which physicians function
- Describe the various roles and responsibilities of members of the health care team
- Interact effectively with all members of the health care team to provide the best possible care for patients
- Relate the effect of public policy actions to individual health and health care systems as a whole
- Define the methods used by individuals and systems to improve quality of care
- Practice a commitment to provide care to patients who are unable to pay and to advocate for access to health care for members of underserved populations
- Recognize and appropriately address gender and cultural biases in themselves and others and in the process of health care delivery

**Self-directed learning and self-assessment (practice-based learning and improvement):** The ability to assess and understand one's learning style, to self-identify areas of strength and weakness, to independently identify and evaluate resources to engage in lifelong learning, and to critically appraise the evolving body of medical knowledge.

Students who are graduated from Virginia Commonwealth University School of Medicine will:

- Appreciate the limitations of one's own knowledge and skills and seek to engage in lifelong learning and the advice and teaching of more experienced medical practitioners to address those limitations
- Appreciate the limitations of the role of a physician
- Appreciate the limitations of the evolving body of medical knowledge
- Retrieve, critically review and utilize biomedical and biopsychosocial information
- Identify means to maintain a healthy balance between professional and personal responsibilities to optimize mental, physical and emotional well-being

## Faculty and facilities

The School of Medicine consists of 700 full-time faculty, including affiliates, assisted by 630 residents and fellows and more than 700 clinical voluntary faculty. Programs of instruction and research are conducted on campus, at the McGuire Veterans Affairs Medical Center and at affiliated hospitals in an effort to expose the students to the variety of clinical disorders encountered in the eastern U.S. The School of Medicine has established a geographically separate campus at the Inova Fairfax Hospital. Each year, 24 third-year students take all their clinical clerkships at Inova Fairfax Hospital. Their fourth year elective program also is based at the Inova Fairfax Hospital.

## Criminal background checks

All applicants to the VCU School of Medicine who receive an acceptance will have a criminal background check performed by Certiphi Screening

Inc. If there is a positive finding you will be notified by Certiphi first; this will allow you to make corrections to the report and verify the information. If there is no change in your status Certiphi will then notify VCU of their positive findings. VCU's Criminal Background Committee will meet to discuss your Certiphi report to determine if acceptance is to be withdrawn. We encourage full disclosure at all times on the AMCAS and supplemental applications, as dishonesty will impact the committee's decision. If you have a legal finding or institutional action against you after the supplemental is submitted please notify our admissions office immediately. Once an applicant is matriculated, full disclosure is also required throughout your time in medical school. Criminal background checks are repeated for all students at the end of the second year and for specific program participations throughout medical school.

## Health policies

Virginia Commonwealth University School of Medicine requires that all medical students carry active health insurance. Health insurance benefits must be equal to or greater than those provided by the university health carrier. In addition, it is required that all students complete required immunizations within six months of matriculation and have repeat tuberculosis screening performed prior to the third-year clerkships. For details related to these policies, please visit [medschool.vcu.edu](http://www.medschool.vcu.edu) (<http://www.medschool.vcu.edu>).

The School of Medicine requires that all students enrolled in the graduate academic programs administered by the school hold active health insurance coverage. This requirement applies to students at all degree categories: doctoral, master's and certificate. Compliance is monitored by administrative offices of the school and departments. Failure to comply with this requirement is grounds for dismissal.

## School of Medicine Registrar

The School of Medicine houses a registrar's office to meet the needs of physician trainees and alumni. Visit the School of Medicine website for more information at [medschool.vcu.edu/studentaffairs/registrar](http://www.medschool.vcu.edu/studentaffairs/registrar) (<http://www.medschool.vcu.edu/studentaffairs/registrar>).

## Professional programs

The School of Medicine offers the Undergraduate Medical Education, leading to the first-professional Doctor of Medicine degree; as well as Graduate Medical Education and Continuing Medical Education. Refer to each program's description for admission and program requirements.

## Undergraduate medical education (M.D.)

The School of Medicine offers the first-professional Doctor of Medicine that develops students' clinical skills, professionalism and critical thinking. For more information about admission standards, curriculum requirements and other policies for the M.D. program, refer to the degree program page in this Bulletin.

## Graduate medical education

Graduate medical education at VCU Medical Center provides diverse opportunities with very high academic and clinical standards for medical and dental graduates to pursue specialty training. Currently we offer more than 70 medical and dental programs. The programs are accredited by either the Accreditation Council for Graduate Medical Education or the American Dental Association. Most of the programs use the ERAS application and the NRMP Matching program. We have more than 700

residents training with the medical center and bring in approximately 200 new residents per year.

All qualified applicants are encouraged to apply to these programs. For a detailed description of the qualifications and requirements please visit [medschool.vcu.edu/gme](http://www.medschool.vcu.edu/gme) (<http://www.medschool.vcu.edu/gme>).

## Student organizations

The School of Medicine, through the Office of Student Affairs, provides oversight to all of the organizations available to medical students. All student organization are required to register with the Office of Student Affairs following established policy and the approved registration format.

For more information, visit the School of Medicine student organizations Web page at [medschool.vcu.edu/studentaffairs/organizations](http://www.medschool.vcu.edu/studentaffairs/organizations) (<http://www.medschool.vcu.edu/studentaffairs/organizations>).

## Medicine, Doctor of (M.D.)

The program for the M.D. degree is divided into four phases. The Scientific Foundations of Medicine covers the first semester and emphasizes the basic science concepts within a clinical context that every student must master to progress with a medical education. The Applied Medical Sciences integrate basic science principles with pathophysiology and treatment using an organ-system approach. This course runs two semesters. The last two years cover the Clinical Concentrations and Advanced Clinical Concentrations. Students are expected to successfully complete clerkships in seven core areas in addition to advanced training that assesses their competency to practice with supervision. There are also opportunities for students to take electives throughout the clinical concentrations to enrich their medical experience and to assist them in planning a career within a specific field of medicine.

School of Medicine students begin their clinical exposure in the first week of medical school in the Practice of Clinical Medicine course. The first week is a "boot camp" in learning the history and physical examination culminating in performing an H and P on a standardized patient that Friday. This longitudinal experience runs throughout the four years and consists of sessions in a physician's office, small-group sessions, workshops and interacting with standardized patients and simulators, and, finally, care of patients in advanced clinical settings. This course gives students the opportunity to learn the clinical relevance of basic science material and to work with a primary care role model.

## Admissions

**Michelle Whitehurst-Cook, M.D.**

Associate dean of admissions  
[medschool.vcu.edu/admissions](http://www.medschool.vcu.edu/admissions) (<http://www.medschool.vcu.edu/admissions>)

The School of Medicine participates in the American Medical College Application Service. The AMCAS application forms can be obtained from AMCAS, 2450 N. St., N.W., Washington, D.C. 20037-1126. The electronic application is available at [aamc.org/students/amcas](http://www.aamc.org/students/amcas) (<http://www.aamc.org/students/amcas>). Updated information is available at the School of Medicine website: [medschool.vcu.edu](http://www.medschool.vcu.edu) (<http://www.medschool.vcu.edu>). Application for the School of Medicine should be made during the first week of June of the year preceding intended matriculation. Letters of recommendation can now be submitted with the AMCAS application.

The closing date for filing applications for this institution is Oct. 15 of the year preceding the enrollment date. Priority for admissions is given to Virginia residents; however 45 percent of each class is from out of state. Members from disadvantaged populations are encouraged to apply to the School of Medicine. Students previously dismissed from a medical school will not be considered. All applicants must be U.S. citizens, permanent residents of the U.S. or Canadian citizens at the time of application. Permanent residents must submit their cards prior to file review.

A nonrefundable \$80 application fee and supplemental information, including letters of recommendation, are required with all applications accepted for further consideration. The final date for returning supplemental information is Jan. 31 of the year of possible enrollment in the School of Medicine. Students are given individual deadlines which are 60 days from the date the Supplemental Application is granted.

The School of Medicine will not matriculate students from other health sciences schools at VCU or any other school until such students have completed the degree program for which they are enrolled.

The School of Medicine participates in the Early Decision Plan. This program permits an applicant to file a single application through AMCAS by Aug. 1. All applicants filing under the Early Decision Plan will receive consideration for admission and a response on or before Oct. 1. All applications for the Early Decision Plan must be supported by the results of the new MCAT test at the time the application is made.

The early notification date of this plan ensures that those who are unsuccessful have ample time to request further distribution of their applications to other medical schools. Further information on the Early Decision Plan is available with the AMCAS application.

## Requirements for entrance

The MCAT is required as part of the application. It is necessary that the test be taken no later than September of the year of application. This test is produced by the American College Testing Program, P.O. Box 414, Iowa City, IA 52240, and is administered in colleges and universities throughout the country. Information about the MCAT is available through premedical advisers or directly from the American College Testing Program.

Applicants may be admitted on the basis of 90 semester hours of outstanding achievement. The majority of successful candidates have a college degree at the baccalaureate level or higher. The college major for premedical students should be selected in accordance with the individual student's aptitude and interest. The prerequisites for the School of Medicine have been reduced to a minimum in order to permit the widest possible latitude in preparation for medical education.

Prerequisites for admission include a minimum of 90 semester hours (or the equivalent) in a U.S. or Canadian college or university accredited by the regional accrediting agency. This program of study must include a minimum of:

1. English – two semesters (one semester to include grammar and composition);
2. College mathematics – two semesters;
3. Biological science – eight semester hours, including laboratory experience. This requirement may be satisfied by general biology, general zoology or botany. No more than half may be botany;

4. General or introductory chemistry – eight semester hours, including laboratory. An appropriate portion of this requirement may be met by courses in analytical chemistry or physical chemistry;
5. Organic chemistry – eight semester hours, including laboratory. This course should be equivalent to and acceptable for continued studies in a chemistry major;
6. General or introductory physics – eight semester hours, including laboratory experience.

Students are encouraged to pursue their own intellectual interests in college in order to obtain a broad education consistent with their major program. Courses in medically related science areas will not relieve the student of his/her responsibility for these subjects in the medical curriculum.

## Selection factors

Demonstrated academic ability, as well as attributes of character and personality, are of significance to the admissions committee in the selection process. A review of academic achievement as represented by the standard academic record and summaries, MCAT scores, evaluations and interviews are all sources of information on which the comparative evaluation process is based. A review of the completed application file and interviews with members of the admissions committee are an integral part of the admissions process.

Noncognitive variables also are sought in all candidates. These qualities include, but are not limited to, health care experience, community service and social concern, communication skills both written and oral, leadership, ethical and moral behavior, creativity, compassion and empathy, altruism, personal maturity, self-confidence without arrogance, appropriate motivation, the ability to realistically self-appraise, and a demonstrated ability to work as a team member. These qualities and characteristics are judged by references within the letters of recommendation and from a careful review of the student's essays and extracurricular activities, as well as the interviewers' assessment during the interview. The School of Medicine hopes to create a learning environment where students will meet colleagues whose life experiences and views differ significantly from their own. A physician must be at home and at ease in a wide variety of environments and with a wide variety of people. Students frequently comment that the aspect of the school they appreciate most is the diversity of their class. The admissions process seeks to foster that diversity of perspective and background by admitting students from a wide range of backgrounds – socioeconomic, cultural, geographic and educational. Health care experience is also examined as a true evaluation of the motivation of the candidate for a career in medicine.

The interview is an opportunity for the applicant to become acquainted with the institution and it offers additional information for the selection process. Only on-campus interviews in Richmond are available. Each year more applicants are interviewed than can be accepted in the class. Therefore, an interview is not an indication of acceptance to the School of Medicine.

Offers for admission are made in the Early Decision Plan on Oct. 1 and on the uniform acceptance date after Oct. 15, with admissions occurring at several points thereafter until the class selections have been completed. The approximate dates for acceptance decisions are Oct. 16, Dec. 15, Feb. 1 and March 15. At the time the class is filled, an alternate list of applicants is compiled from which replacements are drawn for any vacancies that may occur in the selected class between notification and the third week of class attendance.

Since selections are made in advance of actual attendance, all acceptances are made on condition of satisfactory completion of courses planned or in progress. It is expected that candidates will maintain acceptable standards of department. Students offered acceptance into a class are expected to respond within two weeks of the offer. If such a response presents a problem, extension of the time for the response should be requested. After March 31, students are selected from a wait list of very good candidates until the first day of orientation in August.

The enrollment of accepted candidates is considered complete only after payment of the \$100 deposit toward the first tuition payment. This deposit will be returned to the candidate should withdrawal occur prior to May 15 of the year of attendance. By the act of matriculation into the School of Medicine, the student accepts the responsibilities related to this opportunity and agrees that during the time that he/she is a registered student he/she will follow the rules and regulations established by the governing bodies of the School of Medicine and the university.

## Transfer in advanced standing

### Background

It is incumbent upon the School of Medicine to delineate the circumstances under which a student may transfer in advanced standing from another medical school; the number of transfers that will be allowed so as not to encumber educational resources for currently enrolled students; and to assess the qualification of transfer students to assure that they have had a comparable educational experience at the time of matriculation.

### Policy

1. Medical students may only transfer into the VCU School of Medicine under rare and extraordinary circumstances (e.g., natural disaster that prevents continued education at the student's home institution, loss of accreditation by the home institution).
2. Only students from schools that are currently accredited by the LCME or that have recently lost accreditation will be considered for transfer. Osteopathic and international students and those from off-shore medical schools may not transfer.
3. Only U.S. and Canadian citizens and permanent residents may apply to transfer.
4. Students may only transfer into the clinical concentrations component of the curriculum and must complete all of their required clerkships and advanced clinical experiences at the VCU School of Medicine.
5. The senior associate dean for medical education will determine by January of each academic year if there are positions for transfer that would not impede on current resources.
6. Students seeking transfer must submit the following information by Nov. 1 of the year prior to transfer:
  - a. A letter of interest delineating the specific circumstances for transferring
  - b. A copy of the original AMCAS application
  - c. An official transcript from their current school of medicine
  - d. A letter of support from their school's dean of medical education or student affairs
  - e. A copy of the USMLE Step 1 verifying that that student has passed the examination
  - f. A non-refundable processing fee of \$100
7. Information for transfer should be mailed to:

Senior Associate Dean for Medical Education and Student Affairs  
Virginia Commonwealth University School of Medicine  
McGlothlin Medical Education Building  
1201 East Marshall Street, 4th Floor  
P.O. Box 980565  
Richmond, VA 23298-0565

8. The senior associate dean for medical education and student affairs or his/her designee shall review the transcript and possibly contact the applicant's home school to determine that the educational experience is comparable to that of one of our students entering the clinical concentrations. In addition, criteria for comparability shall include, but not be limited to, GPA, USMLE scores and MCAT scores.

Applicants that have met the above requirements and who are deemed to add value to the current group of student will be offered interviews by the administrative staff of the School of Medicine. Holistic interviews will be completed similar to those seeking initial admission to the medical school.

Applicants will be notified of a final decision no later than Jan. 31 of the year of transfer.

## Disability support services

Virginia Commonwealth University in agreement with Section 504 of the Rehabilitation Act of 1973 and The Americans with Disabilities Act of 1990 provides reasonable accommodation to any individual who advises us of a disability. We wish to provide new and current students who have a disability the opportunity to voluntarily identify themselves.

Early identification permits the Division for Academic Success the opportunity to acquire verification of the disability, if required, and the opportunity to get appropriate accommodations in place as soon as possible. All accommodations request are handled on an individual basis. Examples of some accommodations are; extended test taking time, alternative testing format, note takers, readers, scribes, quiet testing area, sign language interpreters, assistive technology and computer software programs which are located in the library for student use.

If you are an individual with a disability and wish to identify yourself as such, please contact the Division for Academic Success. It is important to note that all disclosures are confidential and are released only with your permission. A comprehensive VCU Handbook for Students with Disabilities is available upon request. **Be sure to include your name, address and phone number if you write.** We also are available to answer questions about accommodations and services.

Mail: Director, VCU Division for Academic Success, P.O. Box 980124, Richmond, VA 23298-0124; phone: (804) 828-9782 or VTDD (804) 828-4608; FAX (804) 828-4609; or [das.vcu.edu](http://das.vcu.edu) (<http://das.vcu.edu>)

## C<sup>3</sup> curriculum

### Susan DiGiovanni, M.D.

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The C<sup>3</sup> Curriculum was initiated with the matriculating class of 2017. The curriculum is competency-based, centered on the needs of learners and clinically relevant. The program for the M.D. degree is divided into four phases (a more detailed description of each follows):

- The Scientific Foundations of Medicine

- The Applied Medical Sciences
- The Clinical Concentrations
- The Advanced Clinical Concentrations

In addition, there are four longitudinal courses that run the expanse of the four years of medical school:

- The Practice of Clinical Medicine
- The Physician, Patient and Society
- Population Health and Evidence-based Medicine
- Patient Safety and Quality Improvement

The program for the M.D. degree will be divided into four phases:

**MS I: The Scientific Foundations of Medicine** – This course lasts one semester and is aimed at getting the students who come to medical school with a variety of backgrounds at the same point regarding foundational knowledge necessary for the practice of medicine. The course consists of five subsections:

- The Molecular Basis of Health and Disease
- Fundamentals of Physiology
- Principles of Autonomics and Pharmacology
- Infection and Immunity
- Foundations of Disease

**MS II: The Applied Medical Sciences** – This course is taught over the next two semesters. Using an integrated, organ-system approach, normal functioning is taught in tandem with disease and its treatment. This course includes four subsections:

- Marrow and Movement
  - Musculoskeletal
  - Hematology/Oncology
- Glands and Guts
  - Gastroenterology and metabolism
  - Endocrinology
  - Reproduction
  - Cardiovascular, Pulmonary, Renal
  - Pulmonary
  - Renal/Genitourinary
- Mind, Brain and Behavior
  - Neurosciences
  - Behavioral Sciences
  - Neurology/Neurosurgery

**MS III/IV: Clinical Concentrations** – Covering the remaining two and one-half years, the clinical concentrations include traditional clinical clerkship training, electives and advanced clinical training in field(s) of interest. Scheduling flexibility permits students to intersperse elective opportunities immediately to promote exploration of career interests and maximize individual learning needs. Specialty-specific choices such as electives and advanced clinical training opportunities are selected with the guidance of a specialty adviser. All students complete seven core clerkships, two acting internships and a variety of electives as listed below:

- Core clerkships
  - Family medicine (4 weeks)
  - Internal medicine (8 weeks)

- Neurology (4 weeks)
- Obstetrics/gynecology (6 weeks)
- Pediatrics (6 weeks)
- Psychiatry (4 weeks)
- Surgery (8 weeks)
- Advanced clinical training
  - Inpatient acting internship
  - Critical care acting internship
- Specialty-driven electives
  - Foundational
  - Advanced
  - Non-clinical

**The Practice of Clinical Medicine:** This longitudinal course begins the first week of medical school where students participate in an intensive “boot camp” to learn the essentials of obtaining a history and physical examination. The week culminates with students performing their first complete history and physical examination on a standardized patient. Throughout the first two semesters, students learn to develop communication skills, how to ask patients about specific types of historical information (e.g., sexual history) and detailed organ-specific examinations. Students practice these skills using standardized patients in our state-of-the-art simulation center. The third semester, students are placed with community preceptors to practice these skills with actual patients. The course continues in the clinical and advanced clinical concentrations as students rotate through seven clinical areas and begin assuming the responsibilities to prepare themselves for residency.

**The Physician, Patient and Society:** This course encompasses the humanistic, ethical and legal responsibility of physician to their patients and society. Topics covered include career and professional development, the physician-patient relationship, integrative/complementary medicine, palliative care, spirituality, health disparities, physician bias and cultural competency, and the practical application of ethics and law to the practice of medicine.

**Population Health and Evidence-based Medicine:** During the first three semesters, students develop an understanding of the determinants of health such as socioeconomic, educational and environmental circumstances, the assessment and measurement of health status at the population level, the ability to effectively evaluate the quality of medical literature, and biostatistics. During the clinical concentrations and advanced clinical concentrations the course focuses on the application of prior knowledge in analyzing evidence which contributes to decision-making in patient care.

**Patient Safety and Quality Improvement:** This is an interprofessional course involving learners from the various health professions schools. Introductory course work encompasses topics such as team formation, defining quality, improving quality, leadership, complexity and error, measuring error, error-prevention tools and techniques, and an independent quality/safety improvement project. During the clinical and advanced clinical concentrations students will study and analyze in real time the impact of safety/quality improvement projects within the various health systems where clinical rotations are performed.

## U.S. Medical Licensing Examination

All students are required to pass the U.S. Medical Licensing Examination Step 1 prior to the start of the clinical concentrations.

All students are required to meet with the school designee(s) to prepare an individual study plan for Step 1. After the completion of the Applied Medical Sciences and prior to beginning a plan of study, students are required to take the practice-USMLE examination provided by the National Board of Medical Examiners to generate a baseline score. Students are required to report their results to the school designee(s). Subsequently, students will be required to repeat the examination and report results to the school designee(s). Students are responsible for the costs incurred to take the practice examinations. Students are not allowed to take the Step 1 examination until they have reported a passing practice examination score to the school designee(s). It is expected that students will have taken the Step 1 examination no later than March 30 following the Applied Medical Sciences or they will be dismissed. The school designee(s) advising students may grant an additional eight weeks for students who do not have a passing practice examination score, but thereafter all students must have taken the examination for the first time. Students who do not pass the examination on the first attempt will be placed on a leave of absence for up to one semester. During this time they will be allowed two additional attempts to pass the examination. Failure to pass the examination after three attempts will result in immediate dismissal. Students who fail Step 1 on the first attempt may request additional financial aid to take a commercial board preparation course. These funds will be granted one time only.

All students are required to take the USMLE Step 2 CK and CS for the first time after completion of their core clerkships (family medicine, internal medicine, neurology, ob/gyn, pediatrics, psychiatry and general surgery) or at least six months prior to the anticipated date of graduation. Failure to do so will result in dismissal. Students are required to pass USMLE Step 2 CK and CS for graduation. Students are allowed three attempts to pass Step 2 CK and CS. If they do not pass by the third attempt, they will be automatically dismissed. Students will be allowed up to an eight-week period in an independent study elective for preparation prior to both the second and third attempts of Step 2 CK. Students will be allowed up to a four-week period in an independent study elective for preparation prior to the second and third retakes of Step 2 CS. The last attempt for Step 2 CK and Step 2 CS must be at least a month prior to the anticipated date of graduation. Students who fail Step 2 CK or CS on the first attempt may request additional financial aid to take a commercial board preparation course. These funds will be granted one time only.

Time off from clerkships/elective rotations is not granted to take the Step 2 examinations. Students should plan to take this exam when clinical responsibilities have not been scheduled (e.g., spring break).

## Grading and promotions

### Background

There should be a fair process to review students' attainment of competencies and for students to appeal adverse actions related to advancement and graduation. The committee that makes decisions about remediation or dismissal of students should be composed of individuals who know the students well, are most familiar with the curriculum and are aware of the resources available to enhance student success. In a learner-centered curriculum, remediation plans must be individualized and take into account the totality of the student's performance, from the time of matriculation to the time of review, and consider the attainment of competencies in the following areas:

- **Professionalism:** The ability to understand and demonstrate the nature of professional and ethical behavior in the act of medical care. This includes respect, responsibility, accountability, excellence, honor,

integrity, altruism, leadership, cultural competency, compassion, maintenance of professional boundaries and confidentiality.

- **Patient engagement and communication (interpersonal and communication skills):** The ability to engage and communicate with patients, their families and professional associates, using interpersonal skills to build relationships for information gathering, guidance, education, support and collaboration.
- **Application of scientific knowledge and method (medical knowledge):** The ability to discuss the biomedical, epidemiological and social-behavioral aspects of clinical science and apply this knowledge to patient care.
- **Patient care:** The ability to provide patient care that is appropriate and effective for the treatment of health problems and the promotion of health.
- **Putting care in practical context (systems-based practice):** The ability to provide clinical care within the practical context of a patient's age, gender, personal values, family, health literacy, culture, religion and social and economic circumstances. This goal includes consideration of relevant ethical, moral and legal perspectives, patient advocacy, public health concerns, and resources and limitations of the health care system.
- **Self-directed learning and self-assessment (practice-based learning and improvement):** The ability to assess and understand one's learning style, to self-identify areas of strength and weakness, to independently identify and evaluate resources to engage in lifelong learning, and to critically appraise the evolving body of medical knowledge.

### Policy: The Promotions/Advancement Committee shall consist of the following individuals.

- Voting members
  - Course master for the Scientific Foundations of Medicine
  - Course master for Marrow and Movement
  - Course master for Glands and Guts
  - Course master for Cardiovascular, Pulmonary and Renal
  - Course master for Mind, Brain and Behavior
  - One clerkship director from Family Medicine
  - One clerkship director from Internal Medicine
  - One clerkship director from Neurology
  - One clerkship director from OB/GYN
  - One clerkship director from Pediatrics
  - One clerkship director from Psychiatry
  - One clerkship director from Surgery
  - Representative from the Practice of Clinical Medicine
  - Representative from the Patient, Physician and Society
  - Representative from Population Health and Evidence-based Medicine
- Ex officio members:
  - Senior associate dean for medical education and student affairs (Chair)
  - Associate dean for student affairs
  - Associate dean for medical education, INOVA Campus
  - Assistant dean for the curriculum, MCV Campus
  - Assistant dean for pre-clinical medical education
  - Assistant dean for clinical medical education, MCV Campus
  - Assistant dean for clinical medical education, INOVA Campus

- Assistant dean for student affairs, INOVA Campus
- Representative from the Division for Academic Success
- Representative from University Counseling Services
- Representative from Student Outreach Programs
- Representative from the Admissions Office

To constitute a quorum, at least two-thirds of the voting members need to be present. If a voting member cannot attend a meeting, he/she may send a proxy contingent upon approval of the committee chair.

Because the information discussed in the Promotions/Advancement Committee meeting is confidential, the meeting is closed to the university community and public. If a party not listed above wishes to attend, he/she must acquire prior approval from the committee chair.

The Promotions/Advancement Committee shall meet quarterly and review the progress of all students with an emphasis on any student who is not meeting the competencies of the School of Medicine as evidenced by:

- Grades of Competencies Not Achieved in the Scientific Foundations of Medicine and Applied Medical Sciences (for students in the old curriculum, any grade of competencies not achieved in the M1 or M2 year)
- Grades of Competencies Not Achieved in the Practice of Clinical Medicine, The Patient, Physician and Society, and Population Health and Evidence-based Medicine courses
- Any less than passing grades in required educational experiences in the clinical and advanced clinical concentrations (for students in the old curriculum, any grade of Marginal or failing grade in the required experiences of the M3 and M4 years)
- Any student for whom an early concern note has been sent to student affairs

The Promotions/Advancement Committee shall not promote/advance any student who has failed to meet the competencies of any segment of the curriculum, who demonstrates a consistent pattern of failure to achieve the competencies of the school or who appears unfit for the practice of medicine. In consideration of one's fitness for the practice of medicine and in recognition of the critical role of professionalism in being an effective physician, the Promotions/Advancement Committee shall not promote/advance any student who has demonstrated a significant lack of either integrity or professionalism as outlined in the School of Medicine Standards of Professional Behavior and the competencies of the School of Medicine.

Any member of the committee who has been involved in assigning a student a grade of Competencies Not Achieved or less than passing grade in a required clinical clerkship may participate in the discussion of a student, but must recuse himself/herself in voting on decisions regarding the student.

Students who will be discussed by the Promotions/Advancement Committee for failure to make satisfactory academic progress shall be notified in advance of the meeting. They may not appear before the committee, but may prepare, if they desire, a written statement, which will be distributed to the committee members.

For each student reviewed, an individualized education plan for remediation shall be developed. The plan shall consist of the following components:

- Pertinent background information

- Required remediation
- Recommendations for assistance
- Consequences for failed remediation

Decisions of the Promotions/Advancement Committee shall be by majority vote.

The Promotions/Advancement Committee shall use the following guidelines for making decisions. These guidelines do not dictate a course of action, but represent the usual requirements for students who are not achieving the competencies of the curriculum.

**Scientific Foundations of Medicine:** For the Scientific Foundations of Medicine course, the student must achieve competencies in each division and have an overall course score of 70% to be promoted to the Applied Medical Sciences. If the student fails to obtain Competencies Achieved in one division, he/she will be allowed to take a new assessment in that division. The new assessment will occur upon return from the winter break. If the student scores 70% or higher on the new assessment, he/she will be allowed to advance to the Applied Medical Sciences. If a student has a score of less than 70% in more than one division, or the student fails a new assessment in a single division in which competency is not achieved, he/she will repeat the entire course the next academic year. Students must pass every division in a repeat semester or they will be dismissed.

**Applied Medical Sciences:** The Applied Medical Sciences is divided into two semesters with two courses scheduled each semester. Students must score 70% or higher in each division of each course and obtain an overall grade of 70% to receive Competencies Achieved in a course. If the student does not obtain Competencies Achieved in a single division, he/she will be allowed to take a new assessment at the end of that semester. If they score 70% or higher on the new assessment, they will receive Competencies Achieved for the course. If a student receives Competencies Not Achieved in one division that results in Competencies Not Achieved for the entire course, he/she will also be allowed to take a new assessment in the division with the low score. If a student does not score 70% on the new assessment, this will be considered a course failure. Failure of a course, failure of two or more divisions in a semester or failure of the new assessments will result in the student being required to repeat the semester. Students must pass each division in a repeat semester or they will be dismissed.

**The Patient, Physician and Society; Population Health and Evidence-based Medicine; and The Practice of Clinical Medicine:** Students must receive Competencies Achieved per semester in each of these courses in order to be advanced. Failure to obtain Competencies Achieved in any of these courses will require remediation. The requirements for remediation will be set by the course masters of these courses and approved by the Promotions/Advancement Committee. Failure to successfully remediate will result in the student being required to repeat the entire segment.

**Clinical concentrations:** If a student earns a less than passing grade in a core clinical clerkship, he/she will be reviewed by the Promotions/Advancement Committee. The committee for each clerkship shall make recommendations to the Promotions/Advancement Committee regarding what is considered to be appropriate remediation. If a student has a fail in a clerkship, the student is required to repeat the entire clerkship. If a student has three less-than-passing grades after completing all core clinical clerkships, the student is required to repeat all clerkships. A student repeating all clerkship(s) is expected to achieve a grade of Pass in each or be dismissed. A Marginal grade is not a passing grade. If a

student has four less-than-passing grades in core clinical clerkships, he or she will be dismissed.

If the requirement of the Promotions/Advancement Committee is that a student only repeat a shelf examination, and the student fails the repeat, he/she will be required to retake the clerkship in its entirety. Students may only remediate two shelf examinations. If a student has three or more failures on shelf examinations he/she will be required to repeat all clerkships. A student repeating all clerkship(s) is expected to achieve a grade of Pass in each or be dismissed.

If a student receives a less-than-passing grade in an elective or acting internship, he/she will be required to repeat the entire experience. If they do not pass the experience on the second attempt, they will not be graduated.

**Totality of circumstances:** The Promotions/Advancement Committee will dismiss any student who has demonstrated a consistent pattern of inability to achieve the competencies of the School of Medicine (e.g., Competencies Not Achieved in the Scientific Foundations of Medicine and Applied Medical Sciences and failure on Step 1 of the USMLE).

## The appeal process

Students may appeal decisions of dismissal, except for dismissals by the Honor Council (which should be appealed through the appropriate Judicial Affairs procedures). Students also may appeal decisions to repeat segments of the curriculum or to not be graduated. The Appeals Committee shall consist of department chairs elected by the faculty (one from the basic sciences, a second from the clinical concentrations and a third from the advanced clinical concentrations). The members of the Appeals Committee shall have staggering terms, none lasting longer than four years. One of these members shall be designated by the dean as the chair. If a member of the Appeals Committee has been involved in the assignment of a less-than-passing grade to a student, he/she shall recuse himself/herself from further participation and the dean will appoint a replacement. A student will be granted an appeal hearing only if two senior faculty members selected by the dean agree that any of these situations occurred:

- The Promotions/Advancement Committee process was conducted unfairly or without regard to prescribed procedure or protocol.
- There is new evidence or relevant information not available at the time of the Promotions/Advancement Committee meeting that if consequential, would have altered the decision of the Promotions/Advancement Committee.
- The original decision was not supported by substantial evidence.
- The remediation/consequences imposed were disproportionate to the gravity of the situation.

## Procedure

- A student must file an appeal in writing to the senior associate dean for medical education and student affairs within 14 calendar days of the date of the email notification of action of the Promotions/Advancement Committee. The date of the email marks the official start of the appeal process.
- The student's appeal will be reviewed by two senior faculty members who will decide if there are sufficient grounds to conduct an appeal hearing. This decision will be made within 14 calendar days of receiving the student's written appeal.
- If a hearing is warranted, the Appeals Committee will meet within 21 calendar days of the review by the senior faculty members.

- The appealing student has the right to appear before the Appeals Committee, but the time available to him/her may be limited by the Appeals Committee chair. The time limitation will not be less than one-half hour.
- The student may have anyone who would serve him/her as an adviser present during his/her presentation to the Appeals Committee. The adviser may participate in the student's presentation (within the time limits set forth above) and may address questions to the representative of the Promotions/Advancement Committee.
- The student may have an attorney present, but the attorney may not participate in this academic hearing nor serve as an adviser to the student.
- The appealing student has the burden of proof. The senior associate dean for medical education and student affairs will present the findings of the Promotions/Advancement Committee and describe their discussion to the Appeals Committee.
- The student, his/her representative(s) and the senior associate dean for medical education and student affairs are not present during the deliberations or voting of the Appeals Committee.
- All components of the appeal process are recorded except the deliberations. The recording represents the sole, official, verbatim record of the hearing and is the property of Virginia Commonwealth University School of Medicine.

The Appeals Committee will send its findings and recommendation, and the recorded vote to the dean of the School of Medicine who must act upon the recommendation within 14 calendar days. The dean's decision is final and may not be appealed. Students who have been dismissed may reapply to medical school as a matriculating student.

## Withdrawal

Students may withdraw after meeting with the senior associate dean for medical education and submitting a letter requesting withdrawal.

## Requirements for graduation

The degree of Doctor of Medicine will be conferred by Virginia Commonwealth University upon candidates who, in the opinion of the medical faculty, have:

- Attained the school's educational competencies as evidenced by satisfactory completion of prescribed courses, clerkships, clinical experiences and examinations, by proven clinical skills and responsibilities, and by ethical standards.
- Passed Step 1, Step 2CK and Step 2CS of the U.S. Medical Licensing Examination before graduation (May of the M4 year).
- Attended the School of Medicine for a minimum of two years, one of which must be an academic year of clinical rotations.
- Discharged all financial obligations to the university.
- The School of Medicine requires candidates to be present at both the VCU commencement exercises and the School of Medicine's own convocation exercises unless excused by the dean.

## Medicine, Doctor of (M.D.)/Biomedical Engineering, Doctor of Philosophy (Ph.D.) [combined]

The M.D./Ph.D. program seeks to train physician-scientists for careers that bridge basic and clinical science. Physician-scientists will translate laboratory discoveries into better patient outcomes. The program begins



two months prior to the first year of medical school. These students arrive on campus for orientation and complete two laboratory rotations before the start of medical school classes. They complete the pre-clinical phase of medical school and, after taking the first part of the U.S. National Medical Licensing Examination, enter a Ph.D.-granting department or program as a graduate student. Graduate-level course work, examinations and research will be guided by the dissertation adviser and the dissertation committee, with oversight by members of the M.D./Ph.D. steering committee. The main undertaking at this phase is laboratory research that leads to the Ph.D. dissertation. After completion of doctoral degree requirements, students move to the clinical year of medical school. Students may begin the clinical year of medical school immediately after completion of doctoral degree requirements, regardless of the time in the calendar year, and, 14 to 16 months later, may complete their medical school requirements. These students are exempt from the major part of the fourth year of medical school.

**Apply online at** [graduate.admissions.vcu.edu](http://graduate.admissions.vcu.edu) (<http://graduate.admissions.vcu.edu>).

Prospective students submit applications through the American Medical College Application Service. Upon review of the AMCAS documents, qualified applicants are sent supplemental admission materials, including an application for the M.D./Ph.D. program. Those invited to Richmond for interviews will spend one day in the standard interview for the School of Medicine and will spend a second day interviewing with members of the M.D./Ph.D. steering committee, as well as touring labs of faculty scientists.

Admission of medical students to the Ph.D. phase of training takes place formally following completion of the M-II year of M.D. training. A copy of the student file is transferred to the Office of Graduate Education and the individual is formally accepted to Ph.D. training by the VCU Graduate School.

The requirements for a combined professional school/graduate school degree in the School of Medicine are equivalent to those required of students seeking a graduate degree alone and are determined by the individual program.

For additional information, please see the program website at [mdphd.vcu.edu](http://www.mdphd.vcu.edu) (<http://www.mdphd.vcu.edu>).

#### **Graduate program director**

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**Program website:** [biomedical.egr.vcu.edu](http://biomedical.egr.vcu.edu) (<http://biomedical.egr.vcu.edu>)

## **Medicine, Doctor of (M.D.)/Doctor of Philosophy (Ph.D.) [combined]**

The M.D./Ph.D. program seeks to train physician-scientists for careers that bridge basic and clinical science. Physician-scientists will translate laboratory discoveries into better patient outcomes. The program begins

two months prior to the first year of medical school. Students arrive on campus for orientation and complete two laboratory rotations before the start of medical school classes. They complete the pre-clinical phase of medical school and, after taking the first part of the U.S. National Medical Licensing Examination, M3 orientation and eight weeks of clinical rotations, enter a Ph.D.-granting department or program as a graduate student. Graduate-level course work, examinations and research will be guided by the dissertation adviser and the dissertation committee, with oversight by members of the M.D./Ph.D. steering committee. The main undertaking at this phase is laboratory research that leads to the Ph.D. dissertation. After completion of doctoral degree requirements, students move to the clinical year of medical school. Students may begin the clinical year of medical school immediately after completion of Ph.D. requirements, regardless of the time in the calendar year, and, 14 to 16 months later, may complete their medical school requirements. These students are exempt from the major part of the fourth year of medical school.

Prospective students submit applications through the American Medical College Application Service. Upon review of the AMCAS documents, qualified applicants are sent supplemental admission materials, including an application for the M.D./Ph.D. program. Those invited to Richmond for interviews will spend one day in the standard interview for the School of Medicine and will spend a second day interviewing with members of the M.D./Ph.D. steering committee, as well as touring labs of faculty scientists.

Admission of medical students to the Ph.D. phase of training takes place formally following completion of the second year of M.D. training. A copy of the student file is transferred to the Office of Graduate Education in the School of Medicine, and the individual is formally accepted for Ph.D. training by the VCU Graduate School.

The requirements for a combined professional school/graduate school degree in the School of Medicine are equivalent to those required of students seeking a graduate degree alone and are determined by the individual program.

## **VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs**

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (<http://www.graduate.vcu.edu>) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

**Visit the Graduate study section for additional information on academic regulations for graduate students.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students>)

## Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

**Visit the Graduate study section for additional information on degree candidacy requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy>)

## Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

**Visit the Graduate study section for additional information on graduation requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements>)

## Other information

### School of Medicine graduate program policies

The School of Medicine provides policies applicable to all programs administratively housed in the school. Information on **doctoral programs** is available elsewhere in this chapter of the Graduate Bulletin.

**Apply online at** [graduate.admissions.vcu.edu](http://graduate.admissions.vcu.edu) (<http://graduate.admissions.vcu.edu>).

Prospective students submit applications through the American Medical College Application Service. Upon review of the AMCAS documents, qualified applicants are sent supplemental admission materials, including an application for the M.D./Ph.D. program. Those invited to Richmond for interviews will spend one day in the standard interview for the School of Medicine and will spend a second day interviewing with members of the M.D./Ph.D. steering committee, as well as touring labs of faculty scientists.

Admission of medical students to the Ph.D. phase of training takes place formally following completion of the M-II year of M.D. training. A copy of the student file is transferred to the Office of Graduate Education and the individual is formally accepted to Ph.D. training by the VCU Graduate School.

The requirements for a combined professional school/graduate school degree in the School of Medicine are equivalent to those required of students seeking a graduate degree alone and are determined by the individual program.

For additional information, please see the program website at [mdphd.vcu.edu](http://www.mdphd.vcu.edu) (<http://www.mdphd.vcu.edu>).

### Graduate program director

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**Program website:** [mdphd.vcu.edu](http://www.mdphd.vcu.edu) (<http://www.mdphd.vcu.edu>)

## Medicine, Doctor of (M.D.)/Health Administration, Master of (M.H.A.) [combined]

Advanced study in health administration and medicine is available through a dual-degree program co-sponsored by the Department of Health Administration and the VCU School of Medicine. The program leads to the awarding of the Doctor of Medicine and Master of Health Administration degrees. The objective of the M.D./M.H.A. program is to provide highly motivated medical students the expertise for management and leadership competency in complex health care organizations. Students may indicate their interest in the combined program prior to matriculation or during the first three years of the M.D. program. The program may be completed in five years. Applicants for this program are required to meet the admission requirements of each program.

For the combined degree program, course work for the M.H.A. is initiated following completion of the first two or three years of the M.D. program, occupies a full academic year (fall, spring and summer) and extends into a second year, and is taken during a hiatus from the third or fourth year of the M.D. program.

Students interested in the program may contact the School of Medicine Office of Curriculum or the director of the M.H.A. program in the Department of Health Administration (School of Allied Health Professions). For additional information refer to the School of Medicine handbook available on the school's website at [medschool.vcu.edu](http://www.medschool.vcu.edu) (<http://www.medschool.vcu.edu>).

## Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the **Graduate study section for additional information on degree candidacy requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy>)

## Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the **Graduate study section for additional information on graduation requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements>)

The M.H.A. curricular sequence of the M.H.A./M.D. degree is shown below. Students take a total of 43 credit hours of M.H.A. course work that includes a three-credit hour internship.

### Courses

HADM 602	Health System Organization, Financing and Performance	3
HADM 606	Health Care Managerial Accounting	3
HADM 607	Financial Management in Health Organizations	3
HADM 610	Health Analytics and Decision Support	3
HADM 611	Health Care Law and Bioethics	3
HADM 612	Information Systems for Health Care Management	3
HADM 614	Health Care Marketing	3
HADM 615	Health Care Politics and Policy	3
HADM/ECON 624	Health Economics	3
HADM 646	Health Care Organization and Leadership	3
HADM 647	Management of Health Care Organizations	3
HADM 648	Strategic Management in Health Care Organizations	3
HADM 649	Human Resources Management in Health Care	3
HADM 682	Executive Skills I	1
HADM 693	Internship in Health Administration	3
Total Hours		43

## Total graduate credit hours required (minimum) 43

### Typical plan of study

Many students often end up taking more than the minimum number of hours required for a degree program. The total number of hours may vary depending upon the program, nature of research being conducted by a study or in the enrollment or funding status of the student. Students should refer to their program websites and talk with their graduate

program directors or advisers for information about typical plans of study and registration requirements.

#### Graduate program director

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**Program website:** [had.vcu.edu/prospective/mha](http://had.vcu.edu/prospective/mha) (<http://www.had.vcu.edu/prospective/mha>)

## Medicine, Doctor of (M.D.)/Master of Science (M.S.) [combined]

Medical students seeking to expand their competency in the conduct of research may choose the research-intensive, non-thesis curriculum for medical students in one of several master's-level programs within the School of Medicine. This curriculum builds on the core of disciplinary material embedded in the medical school curriculum in the first two years of training with additional exposure to specialized areas in basic science disciplines. The research experience leads to preparation of a report in the form of a manuscript suitable for publication. The program is designed to be completed within a period of 12 to 15 months.

Contact the graduate program director for additional information.

## VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (<http://www.graduate.vcu.edu>) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the **Graduate study section for additional information on academic regulations for graduate students.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students>)

## Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree

candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

**Visit the Graduate study section for additional information on degree candidacy requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy>)

## Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

**Visit the Graduate study section for additional information on graduation requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements>)

## Other information

### School of Medicine graduate program policies

The School of Medicine provides policies applicable to all programs administratively housed in the school. Information on **master's programs** is available elsewhere in this chapter of the Graduate Bulletin.

### Graduate program director

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## Medicine, Doctor of (M.D.)/Public Health, Master of (M.P.H.) [combined]

### Program accreditation

Liaison Committee on Medical Education (M.D.)  
Council on Education for Public Health (M.P.H.)

## Program goal

The Division of Epidemiology in the Department of Family Medicine and Population Health in the School of Medicine offers a program for VCU medical students to obtain a Master of Public Health degree in conjunction with their medical training. The M.D./M.P.H. combined-degree program provides an opportunity for medical students who wish to pursue a public health or research career to graduate from medical school trained in both clinical and preventive, population-oriented medicine. Graduates from this program are prepared for positions in preventive medicine, primary care, research, community-based

health centers and state and local health departments. To meet degree requirements, students complete:

- 12 credits of core courses
- Nine credits of required courses
- 12 credits of electives
- Three credits of a capstone project

The objective of the combined program is to provide high quality and in-depth training in public health to qualified medical students. The five-year program includes four years of medical school and one year of study in the M.P.H. program. During the M.P.H. year, students take a minimum of 36 credit hours of course work. Students receive three credit hours for successful completion of the "Population Health" course in medical school and take a minimum of one public health elective during the M-4 year to satisfy the public health internship requirement. In addition, a waiver of nine credits that applies to M.P.H. students who hold a terminal or first professional degree is enacted.

**Note:** Students may register for the M.P.H. year either prior to entering medical school or after the M-3 year and prior to M-4 electives. Enrollment in the dual-degree program requires admission into both the School of Medicine and the Graduate School. Students must successfully complete all required course work to receive both degrees at the end of the five years.

The mission of the M.P.H. program is to engage students in an experiential, learner-centered environment, collaborate with public health partners in Central Virginia to promote health equity and community wellness, and foster lifelong inquiry and discovery in interdisciplinary, translational research that improves human health.

The overall goal of the M.P.H. program is to educate students to become well-grounded in the essential knowledge, skills and attitudes of public health and demonstrate their ability to apply these essentials through course work, internships and the M.P.H. capstone project. This program is designed to provide students with the skills required to advance to positions as public health practitioners in a broad spectrum of positions and settings and who can perform the following:

1. Administer public health programs
2. Collect, analyze and evaluate public health data
3. Plan, implement and evaluate public health interventions
4. Apply results of evaluations and data analyses to policy development as necessary
5. Promote public health through educational campaigns

The structure of the program provides a framework for the progressive development of a mastery of the current state of the subject matter of public health and an ability to synthesize and apply this information to the identification of key areas of practice and research in public health. Students will develop educational competencies outlined by the M.P.H. program. These competencies cover the foundational knowledge necessary for a public health practitioner to both communicate the core of public health knowledge and express the design, results and interpretation of various public health interventions, evaluations, and data collection and analysis efforts to a variety of potential audiences.

## Student learning outcomes

The M.P.H. program trains students to develop the following educational competencies, selected from the Association of Schools of Public

Health's "Master's Degree in Public Health Core Competency Model," August 2006.

1. Biostatistics
  - a. Describe the roles biostatistics serves in the discipline of public health
  - b. Describe basic concepts of probability, random variation and commonly used statistical probability distributions
  - c. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met
  - d. Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions
  - e. Apply descriptive techniques commonly used to summarize public health data
  - f. Apply common statistical methods for inference
  - g. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question
  - h. Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation
  - i. Interpret results of statistical analyses found in public health studies
  - j. Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences
2. Environmental health sciences
  - a. Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents
  - b. Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards
  - c. Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues
  - d. Specify current environmental risk assessment methods
  - e. Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety
  - f. Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures
  - g. Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity
3. Epidemiology
  - a. Identify key sources of data for epidemiologic purposes
  - b. Describe a public health problem in terms of magnitude, person, time and place
  - c. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues
  - d. Apply the basic terminology and definitions of epidemiology
  - e. Calculate basic epidemiology measures
  - f. Communicate epidemiologic information to lay and professional audiences
  - g. Draw appropriate inferences from epidemiologic data
  - h. Evaluate the strengths and limitations of epidemiologic reports
4. Health policy and management
  - a. Identify the main components and issues of the organization, financing and delivery of health services and public health systems in the U.S.
  - b. Describe the legal and ethical bases for public health and health services
  - c. Discuss the policy process for improving the health status of populations
5. Social and behavioral sciences
  - a. Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice
  - b. Identify the causes of social and behavioral factors that affect health of individuals and populations
  - c. Describe steps and procedures for the planning, implementation and evaluation of public health programs, policies and interventions
  - d. Apply evidence-based approaches in the development and evaluation of social and behavioral science interventions
  - e. Apply ethical principles to public health program planning, implementation and evaluation
6. Communication and informatics
  - a. Describe how societal, organizational and individual factors influence and are influenced by public health communications
  - b. Demonstrate effective written and oral skills for communicating with different audiences in the context of professional public health activities
7. Diversity and culture
  - a. Describe the roles of history, power, privilege and structural inequality in producing health disparities
  - b. Explain how professional ethics and practices relate to equity and accountability in diverse community settings
  - c. Differentiate among availability, acceptability and accessibility of health care across diverse populations
8. Leadership
  - a. Engage in dialogue and learning from others to advance public health goals
  - b. Demonstrate transparency, integrity and honesty in all actions
9. Public health biology
  - a. Apply biological principles to development and implementation of disease prevention, control or management programs
10. Professionalism
  - a. Apply basic principles of ethical analysis (e.g. the Public Health Code of Ethics, human rights framework, other moral theories) to issues of public health practice and policy
  - b. Apply evidence-based principles and the scientific knowledge base to critical evaluation and decision-making in public health
  - c. Apply the core functions of assessment, policy development and assurance in the analysis of public health problems and their solutions
  - d. Promote high standards of personal and organizational integrity, compassion, honesty and respect for all people
  - e. Distinguish between population and individual ethical considerations in relation to the benefits, costs and burdens of public health programs

- f. Appreciate the importance of working collaboratively with diverse communities and constituencies (e.g. researchers, practitioners, agencies and organizations)

#### 11. Program planning

- a. Differentiate among goals, measurable objectives, related activities and expected outcomes for a public health program
- b. Differentiate the purposes of formative, process and outcome evaluation

## VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (<http://www.graduate.vcu.edu>) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

**Visit the Graduate study section for additional information on academic regulations for graduate students.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students>)

## Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

**Visit the Graduate study section for additional information on degree candidacy requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/degree-candidacy>)

## Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

**Visit the Graduate study section for additional information on graduation requirements.** (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements>)

## Other information

The M.P.H. program student handbook is available upon request.

### School of Medicine graduate program policies

The School of Medicine provides policies applicable to all programs administratively housed in the school. Information on master's programs (<http://bulletin.vcu.edu/graduate/school-medicine/graduate-programs/masters>) is available elsewhere in the Graduate Bulletin.

**For the M.P.H., apply online at [sophas.org](http://www.sophas.org)** (<http://www.sophas.org>).

## Admission requirements

Degree:	Semester(s) of entry:	Deadline dates:	Test requirements:
M.D. and M.P.H.	Fall	Applications strongly encouraged by Jan 1	MCAT (acceptable in lieu of GRE scores for this combined professional/academic degree program) TOEFL

**Note:** Students applying to the joint M.D./M.P.H. program should be accepted to the VCU School of Medicine prior to applying to the M.D./M.P.H. Program. Students must apply separately to each program. Applications to the M.P.H. program are made through [sophas.org](http://www.sophas.org).

In addition to the general admission requirements of the VCU Graduate School (<http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements>), applicants must present the following qualifications.

1. **Prior degree:** Students must hold a bachelor's degree from an accredited institution, with a minimum GPA of 3.0 on a 4.0 scale in all undergraduate and any other graduate study. Official copies of transcripts for all prior degrees earned must be submitted to the VCU Office of Graduate Admissions.
2. **Test scores:** The M.P.H. program normally requires GRE scores, but for the combined M.D./M.P.H., students may submit MCAT scores provided for admission to the School of Medicine in lieu of GRE scores.
3. **TOEFL:** International students must submit TOEFL or IELTS scores. Minimum TOEFL score is 600 (paper-based), 250 (computer-based) or 100 (Internet-based); IELTS minimum score is 7.0. Test score requirements may be waived for international students who have received a medical degree (M.D.) in the U.S. Contact the program coordinator for more information.

Students must also submit the following materials with their applications:

1. Letters of recommendation from three individuals who can assess applicant qualifications for graduate school; at least one academic reference is required, but two are preferred. Most appropriate are letters from past professors or work supervisors.
2. Current version of curriculum vitae or resume. Include experience and/or education relevant to study in public health.

3. Personal statement addressing the following issues:
- What applicant plans to do in the first few years after graduation
  - Why VCU's M.P.H. program best fits the student's public health interests
  - Description of applicant's particular areas of interest in public health (e.g., maternal and child health, cancer epidemiology)
  - How an M.P.H. degree will help the applicant achieve her/his career goals
  - Why the applicant wishes to pursue an M.P.H. degree
  - Description of the applicant's career goals

## Degree requirements

The Master of Public Health program prepares students committed to public health careers in the public, private or nonprofit sectors. Public health works to prevent health problems in populations before these problems occur. The M.P.H. provides a rigorous curriculum to help students develop the analytic and critical reasoning skills to improve population health. The program boasts experiential learning, a highly interactive environment, accessible and approachable faculty and student involvement in important projects.

In addition to general VCU Graduate School graduation requirements (<http://bulletin.vcu.edu/graduate/study/general-academic-regulations-graduate-students/graduation-requirements>), students are required to successfully complete minimum of 36 credit hours of formal course work and practicum, a 20-hour community-based learning experience, attendance at 12 public health seminars, and a capstone project. In addition, medical students will complete a public health elective during the M-4 year at a placement approved by the M.P.H. program director, in lieu of the required public health internship.

The M.P.H. program can be individualized to meet the varied needs and interests of students. The program offers many electives, allowing students to tailor the program to meet educational objectives, and it is flexible enough to accommodate students who enter the program with various backgrounds and experiences.

**Capstone project:** The culminating work in the M.P.H. program is the capstone project. The project is a practical experience that allows the student to apply what has been learned in the didactic components of the curriculum to a focused project. The goal is to enhance the student's academic experience through the application of public health concepts and skills in a supervised experience. Students are required to synthesize the literature; analyze, assess or evaluate quantitative or qualitative data; and in general apply theory and integrate knowledge gained and principles in situations that approximate some aspects of professional practice. With this mentored experience, students are able to both broaden their skills and hone their proficiency in a specific area of public health. The major product of this culminating experience is expected to vary depending on the educational goals of the student, but could include one of the following:

1. Manuscript suitable for publication in a peer-reviewed journal
2. Comprehensive disease-related report
3. Policy analysis report
4. Health promotion materials (e.g., brochures/posters/fliers, educational video games, website content, etc.) on a specific disease area
5. Needs assessment for a specific population
6. Development and implementation of target population surveys

## 7. Program evaluation

At a minimum, the capstone experience will require the integration of multiple major competencies used by a public health professional. In fulfilling the capstone requirement, each candidate must: (a) submit a formal written paper of sufficient depth and rigor and (b) satisfactorily complete a poster presentation of the project chosen as the basis for the written paper at an appropriate venue (e.g., research forum, refereed conference, etc.) approved by the M.P.H. program director.

## Non-didactic program requirements

In addition to course work, students are required to complete the following noncurricular requirements for the M.P.H. degree:

1. Attendance at 12 public health seminars
2. Twenty hours of community-based service-learning

## M.P.H. curriculum requirements for the combined M.D./M.P.H. program

### Core courses

BIOS 543	Statistical Methods I	3
EPID 604	Principles of Environmental Health	3
HCPR 601	Introduction to Health Policy	3
SBHD 605	Introduction to Social and Behavioral Health	3

### Program requirements

BIOS 544	Statistical Methods II	3
EPID 547	Applied Data Analysis Lab I	1.5
EPID 548	Applied Data Analysis Lab II	1.5
EPID 580	Public Health Ethics	1
EPID 593	MPH Practicum	2

### Electives

Select 12 credit hours minimum from the following:		12
BIOS 571	Clinical Trials	
EPID 600	Introduction to Public Health	
EPID 601	Contemporary Issues and Controversies in Public Health	
EPID 603	Public Health Policy and Politics	
EPID 620	Cancer Epidemiology	
EPID 622	Maternal and Child Health	
EPID 624	Chronic Disease Epidemiology	
EPID 646	Epidemiology of Psychiatric and Substance Use Disorders	
EPID 648	Behavioral Epidemiology	
SBHD 608	Health Communication	
SBHD 632	Health Disparities and Social Justice	
SBHD 636	Community-based Participatory Research	

### Integrative program requirements

EPID 694	MPH Capstone Project	3
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### Non-didactic program requirements

In addition to course work, students must attend 12 public health seminars and complete 20 hours of community-based service-learning.

Total Hours		36
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## Sample plan of study for combined program

Fall semester		Hours
After M-3 training		
EPID 547	Applied Data Analysis Lab I	1.5
BIOS 543	Statistical Methods I	3
EPID 580	Public Health Ethics	1
EPID 593	MPH Practicum	2
HCPR 601	Introduction to Health Policy	3
Electives (See list above)		6
Term Hours:		16.5
Spring semester		Hours
After M-3 training		
BIOS 544	Statistical Methods II	3
EPID 548	Applied Data Analysis Lab II	1.5
EPID 604	Principles of Environmental Health	3
EPID 694	MPH Capstone Project <sup>1</sup>	3
SBHD 605	Introduction to Social and Behavioral Health	3
Electives (See list above)		6
Term Hours:		19.5
Total Hours:		36

<sup>1</sup> Student may elect to complete 1-3 credits of EPID 694 in summer.

### Total graduate credit hours required (minimum) 36

Selected course work completed during the M-1 and M-2 years of study for application toward the M.D. accounts for 12 credit hours toward the M.P.H. degree. This includes a waiver of the core epidemiology course EPID 571, due to training in population health in the M.D. curriculum. The public health internship requirement is fulfilled through completion of a public health elective in the M-4 year, after the student completes the M.P.H. year. This elective occurs at a public health agency that is approved by the M.P.H. program director.

#### Graduate program director

Saba Masho, M.D., Dr.P.H.

Associate professor, Division of Epidemiology, Department of Family

Medicine and Population Health

saba.masho@vcuhealth.org

(804) 628-2509

#### Additional contact

Lisa S. Anderson

Director of educational programs, Division of Epidemiology, Department

of Family Medicine and Population Health

lisa.s.anderson@vcuhealth.org

(804) 628-2512

**Program website:** [familymedicine.vcu.edu/education/graduate/dual-degrees/](http://familymedicine.vcu.edu/education/graduate/dual-degrees/) (<http://www.familymedicine.vcu.edu/education/graduate/dual-degrees/>)



## SCHOOL OF PHARMACY

The School of Pharmacy was established officially in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. The two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work and a Bachelor of Science degree was awarded. In 1960, the program lengthened to a five-year course leading to a Bachelor of Science in Pharmacy degree. In 1975, authority was granted to offer to selected students a six-year program leading to the Doctor of Pharmacy degree and this program was adopted as the only professional offering by the school in 1995. The School of Pharmacy currently enrolls students in a four-year professional Doctor of Pharmacy program curriculum following completion of at least 73 credits of pre-professional studies taken at VCU or elsewhere. In 1996 a part-time program was offered that permits current Bachelor of Science in Pharmacy degree holders to earn the Doctor of Pharmacy degree in a nontraditional format requiring students to come to campus infrequently. This program was phased out in 2015 and no longer accepts students for enrollment. Since 1971, all pharmacy students have participated in a clerkship program (now referred to as advanced pharmacy practice experiences) during the final year of the curriculum. Beginning 2008, the school added introductory pharmacy practice experiences during the first three years of the program to gradually transition the student from the academic classroom setting into the practice arena. Students spend their final year in a variety of practice settings under the supervision of highly qualified faculty preceptors.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the Graduate Council in 1952. Departments in the school have the responsibility for administering a graduate program leading to the M.S. and Ph.D. in Pharmaceutical Sciences. This program includes areas of specialization in medicinal chemistry, pharmaceuticals, pharmacotherapy and pharmacy administration. These programs provide the preparation and research experience for academic, governmental and industrial careers. Graduate degrees in pharmaceutical sciences do not provide eligibility for licensure as a pharmacist.

Students may elect to pursue a joint Pharm.D./M.S., Pharm.D./Ph.D., Pharm.D./M.B.A. or Pharm.D./M.P.H. program. Such students must apply to, and be accepted by, both programs separately.

### Administration

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P.O. Box 980581  
Richmond, Virginia 23298-0581  
(804) 828-3000  
Fax (804) 827-0002  
pharmacy.vcu.edu (<http://www.pharmacy.vcu.edu>)

**Joseph T. DiPiro, Pharm.D.**  
Dean

**Cynthia K. Kirkwood, Pharm.D., BCPP**  
Executive associate dean for academic affairs

**Thomas P. Reinders, Pharm.D.**  
Associate dean for admissions and student services

**Aron Lichtman, Ph.D.**  
Associate dean for research and graduate studies

**Phylliss M. Moret**

Assistant dean for experiential education

**Victoria Savoy**  
Assistant dean for finance and administration

**Michael J. Clarke, Pharm.D.**  
Assistant dean for INOVA Campus

**Rafael Saenz, Pharm.D.**  
Assistant dean for UVa campus

**Sean L. Bates**  
Executive director for postgraduate educational programs

**Veronica P. Shuford**  
Director of educational innovation and assessment

**Ellen Carfagno**  
Director of development

**Brian A. Canaday**  
Director of academic technology

**Cynthia H. McMullen**  
Director of public relations and communications

**Michael J. Clarke**  
Assistant Dean for INOVA Campus

**Jeffrey C. Delafuente**  
Associate Dean for Professional Education

**Gary R. Matzke**  
Associate Dean for Professional Education

**Phylliss M. Moret**  
Assistant Dean for Experiential Education

**Thomas P. Reinders**  
Associate Dean for Admissions and Student Affairs

**Regina D. Scott**  
Interim Assistant Dean for Finance and Administration

## Accreditation and Complainant policy

### Pharmacy (Pharm.D.) accreditation

The Doctor of Pharmacy degree program at the Virginia Commonwealth University School of Pharmacy is fully accredited by the Accreditation Council for Pharmacy Education (ACPE), 135 S. LaSalle St., Suite 4100, Chicago, IL 60603-4810. Accreditation standards are available in the school's Office of Admissions and Student Services and via the ACPE website at [acpe-accredit.org](http://www.acpe-accredit.org) (<http://www.acpe-accredit.org>). In 2015 accreditation was extended until 2023. Additionally, the school is a member of the American Association of Colleges of Pharmacy.

### Complainant policy

ACPE has an obligation to assure itself that any institution that seeks accreditation status for its professional degree program conducts its affairs with honesty and frankness. Students who have complaints about the school's ability to meet accreditation standards or adhere to ACPE policies and procedures shall be submitted in writing to the Associate Dean for Admissions and Student Services, VCU School of Pharmacy, 410 N. 12th St., Room 500, Richmond, VA 23298-0581. The complainant is welcome to make an appointment to meet with

school administrators to discuss his or her complaints and options for resolution. If they are not satisfied with the response by the school's representative/s, then complainants may contact ACPE at 135 S. LaSalle St., Suite 4100, Chicago, IL 60603-4810 or [acpe-accredit.org/complaints](http://www.acpe-accredit.org/complaints) (<http://www.acpe-accredit.org/complaints>) with a complaint. A record of written complaints about the school's adherence to ACPE accreditation standards or policies and procedures will be maintained for ACPE to review at the time of an accreditation site visit.

## Statement of purpose

The School of Pharmacy at Virginia Commonwealth University exists to provide exceptional programs benefiting the commonwealth of Virginia and society by offering the highest quality education and training for the development of health care practitioners, scientists, professional leaders and responsible citizens. These individuals are committed to shaping the health care world of tomorrow while serving society's health care needs today.

## Mission statement

### Mission

The mission of the Virginia Commonwealth University School of Pharmacy is to achieve excellence in professional and graduate programs through innovative education and leading-edge research. The school will graduate outstanding future pharmacists and scientists who will improve human health, foster exemplary research and provide sustaining contributions to interprofessional patient care.

### Vision

The Virginia Commonwealth University School of Pharmacy will be a transformational leader in pharmacy education, clinical practice and clinical and pharmaceutical research.

### Core values

Core values express deeply held beliefs and form the foundation on which we conduct ourselves. In an everchanging world, core values are constant. The students, faculty and staff at the School of Pharmacy embrace a set of core values that creates a culture conducive to producing an optimal learning and work environment.

We:

- 1. Are innovative and open-minded**  
We embrace innovation and are open to change and diversity of ideas.
- 2. Embrace change that drives excellence**  
We maintain a willingness to change to further the mission and vision of the School.
- 3. Pursue growth and personal development**  
We pursue professional and personal growth and development to drive excellence.
- 4. Demonstrate integrity and respect**  
We demonstrate moral and ethical principles, personal responsibility and respect for others.
- 5. Foster collaboration**  
We embrace interprofessional and interdisciplinary collaboration in patient care, teaching, learning and research.
- 6. Seek value-added solutions**

Faculty and staff enhance their service by taking extra steps necessary to fully contribute to the School's mission.

#### 7. Encourage commitment

We believe that all faculty, staff and students must strive to achieve the School's mission.

#### 8. Express gratitude

We embrace innovation and are open to change and diversity of ideas.

## Philosophy

The School of Pharmacy has committed to developing progressive models of pharmacy practice while maintaining the foundational pharmaceutical sciences. In developing the curriculum of the school, the faculty recognizes that an educated person should be prepared to assume a responsible and rewarding role in society. The new paradigm of patient-centered, team-based care guides the school's curriculum committee and faculty in the design and implementation of the Doctor of Pharmacy curriculum. The curriculum is designed to provide a sound, scientific and professional background for both those who will enter the practice of pharmacy directly and those who wish to continue graduate education in the pharmaceutical sciences. It also includes courses in the arts and humanities in order to provide students with a broad educational base that will permit participation in community life, not only as a professional, but also as an informed, concerned citizen. The professional curriculum is rigorous and highly demanding of the student's time. The faculty has adopted educational outcomes for the curriculum that describe the knowledge, skills, behaviors, abilities and attitudes that promote holistic patient well-being expected of graduates to deliver the highest quality of direct patient care as an interprofessional team member.

## Facilities

The School of Pharmacy is located in the Robert Blackwell Smith Building at 12th and East Clay streets. This building — named in honor of a distinguished former dean of pharmacy, former president of the Medical College of Virginia and former provost of the MCV Campus — was completed in 1984 with the help of contributions from many alumni and friends of the School of Pharmacy. Additional classrooms, offices and laboratories are located in McGuire Hall and the Virginia BioTechnology Research Park, both located within a few blocks of the Smith Building.

Classes for students in pharmacy also are conducted in Sanger Hall, located between 11th and 12th streets on East Marshall Street, and McGuire Hall, located at the corner of 12th and Clay streets. In conjunction with VCU Health, students receive clinical experience in the hospitals and clinics on the MCV Campus. Other facilities available for teaching include area hospitals and pharmacies. The major library holdings are in the Tompkins-McCaw Library at 12th and East Clay streets.

Location in a major health sciences center provides excellent opportunities for interdisciplinary research and access to clinical facilities. The school is well equipped for graduate research and provides leadership to the VCU Institute for Structural Biology, Drug Discovery and Development at the Virginia BioTechnology Research Park. The institute makes use of synthetic medicinal chemistry, X-ray crystallography, NMR, protein and nucleic acid chemistry, bacterial enzymology and molecular pharmacology to promote drug development. The school also supports the Center for Compounding Practice and Research, the

Center for Biomarker Research and Precision Medicine, and the Center for Pharmacy Practice Transformation.

## Organizations for professional degree students

### Academy of Students of Pharmacy

Students in the School of Pharmacy have an opportunity to become members of this organization that is affiliated with the Virginia Pharmacists Association and the American Pharmacists Association. The group meets regularly presenting programs of interest to the student body.

### Student Chapter Virginia Society of Health-System Pharmacists

Pharmacy students who are interested in the practice of pharmacy in organized health care settings may become members.

### Student National Pharmaceutical Association

This student subdivision of the National Pharmaceutical Association works to provide services to the underserved populations of the Richmond community.

### Student Association of Community Pharmacists

This student organization focuses on issues of interest to students who plan to pursue careers in community pharmacy. It is affiliated with the National Community Pharmacists Association.

### Student Association of Consultant and Geriatric Pharmacists

This organization is for students interested in geriatric pharmacy and/or long-term care and consultant pharmacy.

### Student Chapter of the International Society for Pharmacoeconomics and Outcomes Research

This organization fosters interest among professional and graduate students in pharmacoeconomics and health outcomes assessment.

### Christian Pharmacists Fellowship International

This student organization focuses on helping student pharmacists to grow spiritually and promote fellowship within the profession.

### Fraternities for professional degree students

Chapters of Kappa Epsilon, Kappa Psi, and Phi Delta Chi are active within the student body. These fraternities extend invitations, according to the rules of the Interfraternity Council, to pharmacy students to become members. Eligibility for consideration is based upon academic achievement as determined by the Interfraternity Council and the dean's office.

## Department of Medicinal Chemistry

**Richard A. Glennon, Ph.D.**  
Professor and chair

The Department of Medicinal Chemistry applies the latest strategies and concepts from several broad scientific disciplines including synthetic

chemistry, molecular modeling, computational biology, structural genomics and pharmacology.

## Department of Pharmaceutics

**Douglas H. Sweet, Ph.D.**  
Professor and chair

The Department of Pharmaceutics offers graduate study leading to the degrees of Master of Science and Doctor of Philosophy in Pharmaceutical Sciences. In addition, students may elect to pursue a joint Pharm.D./Ph.D. program. These programs provide the preparation and research experience for academic, federal and industrial careers.

## Department of Pharmacotherapy and Outcomes Science

**Donald F. Brophy, Pharm.D., FCCP, FASN, BCPS**  
Professor and chair

The Department of Pharmacotherapy and Outcomes Science is the largest of the three departments at the VCU School of Pharmacy. The focus of the department is pharmacotherapy (the safe and effective use of drugs in humans) and pharmacy administration (evaluation of the social and economic impact of drug therapy in humans and in health care systems).

## Pharmacy, Doctor of (Pharm.D.)

The school offers the Doctor of Pharmacy degree as a professional degree program. Students must complete a minimum of three years of prerequisite course work prior to admission. The Doctor of Pharmacy degree is awarded after four years of study.

### Student learning outcomes

Pharm.D. students will demonstrate competencies in appropriate medication use and quality improvement; communication abilities; critical-thinking; decision-making; evidence-based practice; inter-professional collaborative practice; medication distribution and control systems management; patient-centered care; patient pharmacotherapy assessment; pharmacotherapy planning and decision-making; pharmacotherapy practice management; professionalism; responsible use of values; ethical principles; self-direction; lifelong learning; social awareness and responsibility; and appropriate NAPLEX scores.

### Accreditation and Complainant policy

The Doctor of Pharmacy degree program at the Virginia Commonwealth University School of Pharmacy is fully accredited by the Accreditation Council for Pharmacy Education (ACPE), 20 N. Clark St., Suite 2500, Chicago, IL 60602-5109. Accreditation standards are available in the school's Office of Admissions and Student Services and via the ACPE website at [acpe-accredit.org](http://www.acpe-accredit.org) (<http://www.acpe-accredit.org>). Additionally, the school is a member of the American Association of Colleges of Pharmacy.

### Complainant policy

ACPE has an obligation to assure itself that any institution that seeks accreditation status for its professional degree program conducts its affairs with honesty and frankness. Students who have complaints about the school's ability to meet accreditation standards or adhere to ACPE policies and procedures shall be submitted in writing to the Associate

Dean for Admissions and Student Services, VCU School of Pharmacy, 410 N. 12th St., Room 500, Richmond, VA 23298-0581. The complainant is welcome to make an appointment to meet with school administrators to discuss his or her complaints and options for resolution. If they are not satisfied with the response by the school's representative/s, then complainants may contact ACPE at 135 S. LaSalle St., Suite 4100, Chicago, IL 60603 or [acpe-accredit.org/complaints](http://www.acpe-accredit.org/complaints) (<http://www.acpe-accredit.org/complaints>) with a complaint. A record of written complaints about the school's adherence to ACPE accreditation standards or policies and procedures will be maintained for ACPE to review at the time of an accreditation site visit.

## Licensing and reciprocity

The Virginia Board of Pharmacy holds qualifying examinations for licensure on an ongoing basis throughout the year. Applicants for the examination must present evidence that their first professional degree was granted by a school of pharmacy recognized by the board. This school is among those recognized. Applicants must also present evidence of completion of 1,500 hours of practical experience. Completion of the school's Pharm.D. program satisfies this requirement. APPE rotations completed outside of the United States may not be counted toward the 1,500-hour requirement.

Those students who intend to be licensed in Virginia should contact the Virginia Board of Pharmacy, 9960 Mayland Dr., Suite 300, Richmond, VA 23233-1463.

## Academic regulations

Matriculation in the School of Pharmacy implies a willingness on the part of students to comply with university rules and regulations and to conduct themselves in a manner befitting members of the profession the students seek to enter. The program of study and regulations regarding courses of study, student conduct, etc. are subject to modification without notice. All rules and regulations set forth in this bulletin, as well as other statements issued by administrative officers of the university, apply until further notice.

## Probation

Students may be placed on probation by either the Admissions Committee or the Academic Performance Committee. Probation is a status indicating that the student's scholarship is deficient and is expected to be improved to a level considered to be satisfactory by the faculty. Students who fail to meet probationary stipulations may expect to have their normal progress through school interrupted. They may be required to repeat a year or to withdraw. Students on probation during the first three years of the professional program are neither allowed to hold an elected office in a student association nor be eligible for nomination as an officer in a student association. Students are not permitted to represent the school in extracurricular activities (e.g., representation at a local, regional or national association meeting, or other professional event). Students are expected to discontinue any outside employment during the academic year. Students are not eligible to pledge a professional fraternity. Students are encouraged to avail themselves of special tutoring and counseling services for improving their academic performance. Additionally, students during the fourth year of the professional program must complete all required and elective advanced pharmacy practice experiential rotations at sites within the VCU School of Pharmacy system and the preceptor must have a current faculty appointment. Students are expected to discontinue any outside employment while completing advanced pharmacy practice experiential rotations. Expiration of probationary status occurs following

the equivalent of an academic year (i.e., two consecutive semesters of successful academic performance during the first three professional years and upon the successful completion of all advanced pharmacy practice experiential rotations in the fourth year.

## Outside work

In general, the faculty believes that students should give first priority to their school work. Students able to maintain academic standing are not restricted with respect to outside employment. Students in academic difficulty will be advised to cease or drastically curtail any outside employment.

## Honor code

All students are governed by the honor code and regulations of the VCU Honor System. The VCU Honor System is based on the foundation that Virginia Commonwealth University recognizes that honesty, truth and integrity are values central to its mission as an institution of higher education. In a community devoted to learning, a foundation of honor must exist if that community is to thrive with respect and harmony. Therefore, members of the academic community are required to conduct themselves in accordance with the highest standards of academic honesty and integrity. Additional information is available at [students.vcu.edu/studentconduct/students/honor-system](http://students.vcu.edu/studentconduct/students/honor-system) (<http://www.students.vcu.edu/studentconduct/students/honor-system>).

## Advising program

Students in the School of Pharmacy seek assistance with academic and personal problems through the school's Office of Admissions and Student Services. Students are provided with information about accessing resources within the school, university and professional community. Also, faculty members serve as mentors to students throughout the four year curriculum.

There is a faculty adviser to the Interfraternity Council as well as an adviser for each of the professional pharmacy fraternities. Each of the student chapters of professional pharmacy organizations within the school also has a designated faculty adviser.

## Attendance regulations

The following regulations apply specifically to students enrolled in the Doctor of Pharmacy program in all of their required and elective courses offered by departments in the School of Pharmacy.

1. The faculty considers class attendance at lectures to be an important component in the successful acquisition of knowledge and skills required of the Doctor of Pharmacy candidate. Students are strongly encouraged to attend all classes and conferences. An individual faculty member may require attendance in his or her course and establish penalties for those who are absent without an excuse from the dean's office.
2. Attendance at laboratory and prelaboratory classes is mandatory. Students must complete all laboratory assignments before a passing grade can be assigned. An excused absence from the dean's office is required for missing a laboratory or prelaboratory class with the ability to make up the work with credit. Students without an approved absence are still required to make up the work but will not receive credit toward their course grade.
3. Students must take tests (e.g., quizzes, laboratory practicals, examinations) and complete all other assignments at the time designated by the course coordinator. Students must recognize that faculty may give unannounced tests at any time during a course,

consistent with documentation in a course syllabus. Students who miss any test in any course without an excused absence from the dean's office will receive a grade of zero for the specific test.

4. Attendance during each assigned clerkship period is mandatory. If a student is unable to attend to required clerkship responsibilities because of illness or other exceptional circumstances, the preceptor must be notified immediately. It is the responsibility of the student to also notify the clerkship director concerning a plan to make up the absence, with the approval of the preceptor. Documentation of the absence and approval to make up the absent time will be maintained in the student's record.
5. Absences may be excused under certain conditions. Requests for excuses for unavoidable absences must be submitted to the dean's office electronically within 24 hours of returning to the School of Pharmacy. The student must complete the Absence Record form with an explanation for the absence. Further explanation, if necessary, may be provided to the associate dean for admissions and student services. It is a violation of the honor code to make false or misleading statements on the Absence Record form. In the event of an unexcused absence, the student is responsible for all work missed.
6. A guiding principle in determining whether or not an absence will be excused is that the absence is caused by circumstances beyond the student's control. The following are considered valid excuses for being absent from a class or clerkship.
  - a. Illness, a medical emergency, a dental emergency. The school normally accepts the student's judgment that the condition was serious enough to justify the absence from class; however, the school reserves the right to require a medical opinion, particularly if the period of absence is prolonged or is repetitive. The school will require a written medical opinion when a student is absent from taking a scheduled test or final examination. If the absence is a result of a medical emergency, the student will be required to sign a written release for the school to obtain documentation from their physician describing the exact nature of the illness or emergency. This record will be submitted to the associate dean for admissions and student services as a confidential document.
  - b. Death of a relative or friend. Students will be excused from class to attend funerals. Absence beyond the day of the funeral will be excused for periods of mourning required by a student's religious or cultural tradition, or when a student is too grief-stricken to return immediately to class.
  - c. Mandatory court appearance.
  - d. Mandatory religious observances. Students who anticipate absences from class because of religious obligations should submit a list of their anticipated absences at the beginning of each semester to the dean's office.
  - e. Failure of private, public or university transportation. Students are expected to take reasonable precautions to assure that the transportation method used is fully functional (e.g., maintaining personal automobile, avoiding the last possible return airline flight to Richmond). Proof of transportation failure will be required.
  - f. Attendance at professional meetings. Students in good academic standing may receive an excused absence from class to attend a meeting of a professional pharmacy organization. The student must complete an Absence Record form in advance of attending a professional meeting. A policy statement containing eligibility criteria is distributed to all students.

Tardiness is a form of absence that also may be excused using the criteria mentioned above. Students arriving late for a test may be given the test without an excused absence but will not be allowed extra time beyond the scheduled termination of the test. Once any student has completed the test and left the room, late-arriving students will not be permitted to take the test unless the absence is excused.

Absences that are not reported within 24 hours after the student returns to school will be considered unexcused. It is not the responsibility of a faculty member to determine whether an absence is excused. This determination will be made by the dean's office.

Students are expected to make every effort to keep abreast of their assignments during an absence. They should also be prepared to take tests upon their return to the school or at the discretion of the faculty member after considering the student's academic schedule. If, in the opinion of the dean's office, the nature of a student's absence made it impossible for that student to prepare for a test, the student will be granted an extension for taking the test.

A faculty member should not give a make-up test before confirming that a student's absence has been excused. The faculty member usually provides an equivalent make-up test within a reasonable period of time. The type and format of the make-up exam will be determined by the faculty member. Within the framework of the honor code, it may be possible to administer the same examination no more than 48 to 72 hours after the originally scheduled examination. Any make-up examination should be scheduled as soon as possible to avoid impeding the student's academic progress.

## Promotion

Attending pharmacy school is not a right acquired simply by conforming with the entrance requirements and paying tuition and fees. For this reason the dean and the Academic Performance Committee require that marginal or failing performance be improved or that the student withdraw from school. D grades are indicative of marginal performance. Careful consideration is given during the promotions process not only to the student's grades but also to his or her probity, industry and scholastic ability.

These guidelines delineate the course of action to be taken by the committee. Decisions regarding individual students will be made in accordance with these guidelines. Consideration will be given to pertinent information and extenuating circumstances for individual cases. The following statements present the prominent features of the promotions process.

1. Students are evaluated for progress at the end of each semester. The Academic Performance Committee assesses student progress for each of these periods. At the end of the fourth year the entire faculty will decide whether or not students have satisfied all requirements for graduation. Promotion decisions are based on achievement during the year under review and on the student's overall progress.
2. Students who have passed the work of an academic year with grades of C or better in all courses will ordinarily be advanced to the next higher class.
3. The Academic Performance Committee thoroughly reviews the academic record of each student who fails to pass a course, receives a D grade, does not maintain a GPA of 2.0 or better for the year or semester in question, or is on probation. Following this review, the committee may recommend promotion on a probationary basis,

require a repeat of all or a part of previous work, or terminate the student's enrollment.

- Students who fail two or more courses during the program may be dismissed.
- A student who earns D grades for six credits or more of class work in any year and/or a GPA of less than 2.0 in any year will be subject to academic probation, dismissal or may be asked to repeat the year. Students will be subject to academic probation, dismissal or may be asked to repeat the year if they earn more than one D or F grade in any one of the following sequences of related courses: basic health sciences, medicinal chemistry, pharmacy and pharmaceuticals, pharmacotherapeutics, and pharmacy administration. Students who fail to meet conditions of probation will be required to withdraw or repeat a year's work. Students will not be allowed to repeat more than one year of the curriculum. A student must have passed all courses from the first three years of the curriculum to qualify for entry into the final year of the program.

## Withdrawal

Students finding it necessary to withdraw from the School of Pharmacy must comply with the provisions for withdrawal set by the university.

The dean of the School of Pharmacy will not approve a request for withdrawal until the student has submitted a letter of resignation.

Students withdrawing without approval and failing to check out laboratory lockers will be assessed a fee and any charges resulting from the need to replenish the contents of the lockers.

## Readmission

Students seeking readmission to the School of Pharmacy will be evaluated on their total academic record. Applicants for readmission to the first professional year will not be given priority over new applicants but must compete with them on an equal basis. Readmission in advanced standing will be considered on a space-available basis.

## Graduation

Students are recommended and approved for the Doctor of Pharmacy degree by the faculty of the School of Pharmacy. Candidates must meet the following requirements:

- Be of good moral character
- Satisfactorily complete all the required work in a timely fashion, which will not normally exceed five years from the date of initial enrollment
- Pay all fees
- Complete the last year's work for the degree in residence in this school
- Be present at the commencement-related exercises unless excused in writing and in advance by the dean
- Satisfactorily complete the minimum number of required advanced practice experience rotations and demonstrate the attainment of minimum competencies

## Financial aid

See the Professional studies section of this bulletin.

## Courses of instruction

Enrollment in courses included in the Doctor of Pharmacy curricula summarized on the preceding pages requires the approval of the dean

of the School of Pharmacy unless the student has been admitted to the Doctor of Pharmacy Program.

Applicants for admission to the School of Pharmacy must complete, at minimum, 73 semester hours or 111 quarter hours of course work taken at a U.S.-accredited college/university and complete the specified course requirements prior to admission..

Students planning to seek a degree in pharmacy upon high school graduation should plan their high school program to meet the requirements for admission in the college where they will take the prerequisite work for admission into the VCU School of Pharmacy.

The minimal admission requirements are listed. (Meeting these requirements does not, however, guarantee acceptance into the VCU School of Pharmacy.)

- Three letters of reference are required. These include a reference from a science professor, a health professional (pharmacist preferred) and an employer.
- An official transcript from the student's primary college and all colleges attended must be supplied. Applications are considered by the admissions committee only after transcripts on file show completion of no fewer than 60 semester hours or 90 quarter hours of college work. When offered, an acceptance is contingent upon satisfactory completion of specific work that may be in progress.
- Applicants must present the required credits in the following subject areas for a minimum total of 73 semester hours.

General biology (lecture and laboratory)	8
College chemistry (lecture and laboratory)	8
Organic chemistry (lecture and laboratory)	8
Physics (lecture and laboratory)	4
Human anatomy <sup>1</sup>	3
Human physiology	3
Microbiology <sup>1</sup>	3
Biochemistry	3
English <sup>2</sup>	6
Calculus	3
Statistics	3
Communications course <sup>3</sup>	3
Biomedical science foundation and elective courses	35
<b>Minimum</b>	<b>90</b>

<sup>1</sup> One hour of lab in these subjects also preferred

<sup>2</sup> At least three semester hours of composition and rhetoric is required. Up to three semester hours can be fulfilled with documentation of a writing-intensive course.

<sup>3</sup> Examples include public speaking, speech, introduction to communication, interpersonal communication skills. (Note: This course may NOT be taken online.)

- Due to the importance of a strong biomedical science foundation for success in the Doctor of Pharmacy program, some or all of the courses listed below are recommended.

Genetics	3
Molecular biology	3
Immunology	3

## Cell biology 3

Any of these four courses will count toward the minimum of 18 semester hours of general electives. All other general electives must be non-science or non-math. Highly recommended electives are computer science, economics, psychology and sociology.

5. The 18 semester hours of non-science/non-math general electives will be considered fulfilled if an applicant provides an official transcript documenting the completion of his or her baccalaureate degree prior to enrollment in the Doctor of Pharmacy degree program.
6. Credits earned through Advanced Placement Tests of the College Board or International Baccalaureate may be accepted for select courses. AP/IB credit may excuse a student from taking a specific non-science course such as English, but the credits must be made up through additional electives. The only science and math AP/IB courses that will be acceptable to meet prerequisite requirements are calculus and physics. Other AP/IB credits in science (e.g., biology, chemistry) may be made up with courses in kind. Generally this requirement is achieved by taking advanced-level courses in the same discipline (e.g., physical chemistry as a substitute for AP/IB credit in general chemistry).
7. Dual-credit courses taken during high school may be considered acceptable for transfer credit pending review of college transcripts.
8. Applicants must have earned a creditable average (C or better) overall, and in the courses specified, to meet minimum academic requirements for admission.
9. Applicants for admission must apply online through PharmCAS, a centralized application service for pharmacy schools. The PharmCAS website at [pharmcas.org](http://www.pharmcas.org) (<http://www.pharmcas.org>) provides further details.
10. An on-campus interview is mandatory for admission consideration.
11. Applicants are required to take the Pharmacy College Admission Test before admission.
12. Applicants whose first language is not English and who have not lived in the U.S. for at least 10 years should submit scores from the Test of English as a Foreign Language, the Test of Spoken English or other proof that their command of English is sufficient to allow successful completion of all requirements of the program.
13. Students are admitted only at the start of the academic year. An applicant must complete two full years of the academic prerequisites before an application can be reviewed. The Admissions Committee begins reviewing applications during September of the year preceding admission. It is to the applicant's advantage to apply during the fall of the year before expected enrollment in the School of Pharmacy. Applicants are accepted pending satisfactory completion of all prerequisite courses. Notification usually occurs in early spring.
14. Prior to enrolling, successful applicants must meet the immunization requirements set forth in the "Professional study" section of this bulletin. Prior to entering the fourth professional year, students must satisfy all university and APPE site immunization requirements.
15. Applicants exercising the early decision option for admission to the VCU School of Pharmacy must submit their fee and official transcript from all postsecondary institutions ever attended to PharmCAS by the specified deadline. Applicants whose materials are not received or whose applications are incomplete by these deadlines will be ineligible for the early decision option, and they will be deferred to regular admission status. Applicants exercising the early decision option are expected to make a commitment to attend the VCU School of Pharmacy if accepted. If an acceptance offer is not made under

the early decision option, the applicant is then moved to regular admission status and continues to be evaluated for admission during the remainder of the admission cycle. The applicant is then free to apply to other schools of pharmacy under the regular admission procedure.

16. Applicants pursuing "regular admission" to the VCU School of Pharmacy must submit the electronic application, letters of reference and transcripts to PharmCAS by the specified deadline. Applicants who do not meet these PharmCAS deadlines will be ineligible for admission to the VCU Doctor of Pharmacy degree program.
17. Applicants to the program must be U.S. citizens or permanent residents of the U.S.

The following criteria are considered in judging applicants:

- College attended
- Academic workload carried
- College overall GPA
- Chemistry, biology and math proficiency
- Outside activities and achievements in high school and college
- PCAT scores
- Written and oral communication skills
- Extent of exposure to pharmacy practice
- Extent of exposure to other health disciplines
- Personal interview

Time demands for this full-time program are rigorous. In general, the first three years require a Monday–Friday (8 a.m.–6 p.m.) commitment for lectures, conferences, laboratories and off-campus visits to area pharmacy practice sites. The fourth year is devoted to experiential learning at sites located throughout Virginia. Students enrolling in the four-year professional degree program must agree to the possibility of being assigned to sites beyond the Richmond metropolitan area (e.g., eastern, northern or western Virginia). Candidates must assess personal obligations prior to seeking application.

VCU does not discriminate against qualified applicants for admission who have disabilities, and seeks to provide reasonable accommodation to applicants and admitted students who identify themselves as having disabilities. Academic requirements essential to the program or to directly related licensing requirements will not be substituted. Upon acceptance into the program, students in need of accommodation may contact the MCV Campus coordinator for students with disabilities at (804) 828-9782 to discuss their needs.

Further information may be obtained by writing to the Chair, Admissions Committee, School of Pharmacy, Virginia Commonwealth University, P.O. Box 980581, Richmond, VA 23298-0581. Applicants also may call a toll-free telephone number, (800) 330-0519 for assistance.

## Curriculum

### P1 year

#### Fall

IPEC	501	Foundations of Interprofessional Practice	1
MEDC	527	Basic Pharmaceutical Principles for the Practicing Pharmacist	3
MEDC	533	Pharmacognosy	2
PCEU	501	Pharmaceutical Calculations	1
PCEU	507	Pharmaceutics and Biopharmaceutics I	3

PHAR	509	Evidence-Based Pharmacy I: Introduction to Pharmacy Information Skills	1.5
PHAR	523	Foundations I	1.5
PHAR	545	The U.S. Health Care System	2
PHAR	547	Managing Professional Patient-centered Practice	1.5
PHAR	652	Health Promotion and Communication in Pharmacy Practice	2.5
PHAR	771	Student Pharmacist Professionalism	continues
Term Hours:			19

**Spring**

MEDC	553	Clinical Therapeutics Module: Introduction to Medicinal Chemistry <sup>1</sup>	1
PCEU	508	Pharmacokinetics <sup>1</sup>	3
PCEU	509	Pharmaceutics and Biopharmaceutics II	3
PHAR	513	Contemporary Pharmacy Practice	2
PHAR	524	Foundations II	1.5
PHAR	526	Community Pharmacy Practice	2
PHAR	529	Clinical Therapeutics Module: Introduction to Special Populations <sup>1</sup>	2
PHAR	530	Introductory Pharmacy Practice Experience: Community Practice	4
PHAR	771	Student Pharmacist Professionalism	continues
PHTX	606	Clinical Therapeutics Module: Introduction to Pharmacology (Pharmacy) <sup>1</sup>	1
Term Hours:			19.5

**P2 year****Fall**

MEDC	543	Clinical Chemistry for the Pharmacist	2
PHAR	534	Foundations III	1
PHAR	541	Patient Assessment in Pharmacy Practice	2
PHAR	544	Clinical Therapeutics Module: Cardiovascular <sup>1</sup>	4.5
PHAR	555	Clinical Therapeutics Module: Endocrinology <sup>1</sup>	2.5
PHAR	565	Evidence-based Pharmacy II: Research Methods and Statistics <sup>1</sup>	2.5
PHAR	603	Clinical Therapeutics Module: Respiratory/Immunology <sup>1</sup>	3
PHAR	622	Epidemiology and Pharmacy Practice <sup>1</sup>	2
PHAR	771	Student Pharmacist Professionalism	continues
Term Hours:			19.5

**Spring**

IPEC	502	Interprofessional Quality Improvement and Patient Safety	1
MEDC	542	Biotechnology-derived Therapeutic Agents	1
PCEU	615	Applied Pharmacokinetics	2.5
PHAR	532	Introductory Pharmacy Practice Experience: Hospital Practice	3
PHAR	535	Foundations IV	1
PHAR	566	Evidence-based Pharmacy III: Drug Literature Evaluation	2
PHAR	604	Clinical Therapeutics Module: Infectious Diseases <sup>1</sup>	4.5

PHAR	606	Clinical Therapeutics Module: Nephrology/Urology <sup>1</sup>	2
PHAR	661	Institutional Pharmacy Management	2
PHAR	771	Student Pharmacist Professionalism	continues
Term Hours:			19

**P3 year****Fall**

PHAR	540	Self-Care and Alternative and Complementary Treatments	2.5
PHAR	549	Pharmacogenetics <sup>1</sup>	1
PHAR	550	Pharmacy Practice Research	continues
PHAR	556	Clinical Therapeutics Module: Neurology	4
PHAR	602	Clinical Therapeutics Module: Psychiatry <sup>1</sup>	3
PHAR	605	Clinical Therapeutics Module: Hematology/Oncology <sup>1</sup>	2.5
PHAR	640	Foundations V	1
PHAR	660	Community Pharmacy Practice Management II	2
PHAR	771	Student Pharmacist Professionalism	continues
Elective			2-3
Term Hours:			18-19

**Spring**

PHAR	533	Introductory Pharmacy Practice Experience: Service-learning	0.5
PHAR	550	Pharmacy Practice Research	3
PHAR	607	Clinical Therapeutics Module: Dermatology/EENT <sup>1</sup>	2
PHAR	618	Clinical Therapeutics Module: Gastrointestinal/Nutrition <sup>1</sup>	2.5
PHAR	619	Clinical Therapeutics Module: Women's Health/Bone <sup>1</sup>	2
PHAR	620	Clinical Therapeutics Module: Critical Care/Toxicology <sup>1</sup>	2.5
PHAR	621	Pharmacoeconomics	2
PHAR	645	Foundations VI	1
PHAR	724	Pharmacy Law	2.5
PHAR	771	Student Pharmacist Professionalism	continues
Elective			2-3
Term Hours:			20-21

**P4 year (over 45 weeks)**

PHAR	760	Acute Care Pharmacy Practice I	5
PHAR	761	Advanced Hospital Pharmacy Practice	5
PHAR	762	Geriatrics Pharmacy Practice	5
PHAR	763	Ambulatory Care Pharmacy Practice	5
PHAR	765	Elective I	5
PHAR	766	Elective II	5
PHAR	768	Advanced Community Pharmacy Practice	5
PHAR	771	Student Pharmacist Professionalism	1
PHAR	773	Acute Care Pharmacy Practice II	5
Term Hours:			41

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Total Hours: 156-158



<sup>1</sup> Course will be taught as a module.

## Pharmacy, Doctor of (Pharm.D.)/ Aging Studies, Certificate in (Post- baccalaureate graduate certificate) [combined]

The Department of Gerontology, in cooperation with other programs at the university, provides students interested in working with elders or in gerontological settings with the opportunity to complete the Certificate in Aging Studies while also completing requirements for other degree programs. Students must apply separately to the participating programs and must meet all admission and degree requirements for both programs. In some cases, and with the approval of the advisers of both programs, course work in one program may be approved to satisfy a course requirement in another program.

In cooperation with the School of Pharmacy, the department provides an opportunity for students in the Doctor of Pharmacy program to complete the certificate. The 21-credit-hour program is designed to integrate the required independent study project in gerontology into the Pharm.D. curriculum's clerkship assignment.

### Curriculum requirements

GRTY 601	Biological and Physiological Aging	3
GRTY/PSYC 602	Psychology of Aging	3
GRTY 603	Social Gerontology	3
GRTY 692	Independent Studies	1
GRTY elective(s)		3
PHAR 529	Clinical Therapeutics Module: Introduction to Special Populations	2
PHAR 533	Introductory Pharmacy Practice Experience: Service-learning	0.5
PHAR 565	Evidence-based Pharmacy II: Research Methods and Statistics	2.5
PHAR 566	Evidence-based Pharmacy III: Drug Literature Evaluation	2
PHAR 721	Clinical Therapeutics Module: Integrated Medication Management	1
Total Hours		21

### Total graduate credit hours required (minimum) 21

Contact the respective departments for additional curriculum information.

#### Graduate program director

E. Ayn Welleford, Ph.D.  
Chair, Department of Gerontology  
Email: ewellefo@vcu.edu  
Phone: (804) 828-1565

**Program website:** [sahp.vcu.edu/gerontology](http://www.sahp.vcu.edu/gerontology) (<http://www.sahp.vcu.edu/gerontology>)

## Pharmacy, Doctor of (Pharm.D.)/Business Administration, Master of (M.B.A.) [combined]

The Pharm.D./M.B.A. program seeks to prepare pharmacists for careers that encompass pharmacy and business theories and principles. The program is designed to take advantage of efficiencies and electives in both the Pharm.D. and M.B.A. programs. Students in the combined program can earn both degrees and save as much as one year or more over the time required for completing the programs separately.

Students may be admitted into the program during the first year of enrollment in the Pharm.D. program. Applicants must be enrolled in the Pharm.D. program, have demonstrated a good academic record and have successfully completed the Graduate Management Admission Test.

To obtain both degrees, students will take all pharmacy courses unless waived, the seven business foundation courses, the nine M.B.A. core courses and three elective courses. The elective M.B.A. courses may be taken from pharmacy administration courses at the 600 level and a combination of a business seminar course and an elective advanced pharmacy practice experience in pharmacy management. The business foundation courses can be taken during the first two years in the pharmacy program with summer session(s). The M.B.A. core courses can be taken during the third and fourth years in the pharmacy program. The business electives can be taken during the fourth and fifth years in the combined program.

**Apply online at** [graduate.admissions.vcu.edu](http://graduate.admissions.vcu.edu) (<http://www.graduate.admissions.vcu.edu>).

### Application to Pharm.D./M.B.A. program

Students interested in pursuing the Pharm.D./M.B.A. program must first obtain admission to the Pharm.D. program. Admitted Pharm.D. students who wish to add the M.B.A. degree must then apply to the M.B.A. program. Upon admission to the M.B.A. program, a Pharm.D. student will be considered a dual-degree-seeking student. Students generally will register for a mix of School of Business courses and School of Pharmacy courses in the fourth, fifth and sixth semesters of the pharmacy program.

A student categorized as a Pharm.D. student will be charged tuition and fees from the School of Pharmacy and will be eligible to receive financial aid awards as a Pharm.D. student. Students categorized as M.B.A. students will be charged tuition and fee rates as graduate students and be eligible to receive financial awards as graduate students.

#### Graduate program director

Colleen Androvich Davis  
Senior director, master's program  
Email: [androvichcm@vcu.edu](mailto:androvichcm@vcu.edu)  
Phone: (804) 828-6684

#### School of Pharmacy contact

Aron Lichtman, Ph.D.  
Associate dean for research and graduate studies  
School of Pharmacy  
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Phone: (804) 628-5233

**Program websites:** [pharmacy.vcu.edu](http://www.pharmacy.vcu.edu) (<http://www.pharmacy.vcu.edu>) and [business.vcu.edu/graduate](http://business.vcu.edu/graduate.html) (<http://business.vcu.edu/graduate.html>)

## Pharmacy, Doctor of (Pharm.D.)/ Pharmaceutical Sciences, Doctor of Philosophy (Ph.D.) [combined]

**Note: Admission to this program has been suspended. While the program is currently going through revisions, information can be obtained from the Office of Research and Graduate Studies.**

The combined Pharm.D./Ph.D. program in the School of Pharmacy is a full-time program of professional education that offers an opportunity for advanced study in pharmaceutical sciences. The program recognizes the need for pharmacy practitioners with excellent research skills in clinical, academic, industrial and regulatory environments. The program is designed to take advantage of efficiencies in both the Pharm.D. and Ph.D. curricula and to allow Pharm.D./Ph.D. students to complete the program requirements of both programs after approximately six years, with both degrees being awarded at the same graduation ceremony.

Pharm.D./Ph.D. students can focus on the following research areas within the School of Pharmacy: pharmacotherapy and health outcomes, pharmacokinetics/pharmacodynamics, biopharmaceutical analysis, pharmaceutics/physical pharmacy, and medicinal chemistry. Students also may focus on pharmacology and toxicology within the School of Medicine. The choice of research area determines the required graduate course requirements.

During their P-2 through P-4 years, Pharm.D./Ph.D. students will complete the required Pharm.D. curriculum using graduate courses in lieu of required Pharm.D. courses and Pharm.D. electives. In addition, Pharm.D./Ph.D. students will engage in graduate research during the summer semesters following the P-2 and P-4 years. After the P-4 year and beyond (G-1 and G-2), Pharm.D./Ph.D. students will complete both their graduate course requirements and Ph.D. dissertation research project as full-time graduate students. Stipends and tuition reimbursement may be provided for Pharm.D./Ph.D. students serving as graduate teaching or research assistants.

**Note: Admission to this program has been suspended.**

**Apply online at** [graduate.admissions.vcu.edu](http://graduate.admissions.vcu.edu) (<http://www.graduate.admissions.vcu.edu>).

### Application to the combined program

Students may be admitted into the combined Pharm.D./Ph.D. program during the first or second year (P-1 and P-2) of enrollment in the Pharm.D. program. Applicants must demonstrate a good academic record, experience in research (e.g., during summer research fellowships after the P-1 year with one of the School of Pharmacy's graduate faculty) and successful completion of the Graduate Record Examination. Additionally, the application must be sponsored by a graduate faculty member as the prospective major graduate adviser. Appropriate progress of Pharm.D./Ph.D. students in the program will be assessed by the Pharm.D./Ph.D. subcommittee after each semester until successful completion of the comprehensive examinations.

#### Graduate program director

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#### Additional contact

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**Program website:** [pharmacy.vcu.edu](http://pharmacy.vcu.edu) (<http://www.pharmacy.vcu.edu>)

## Pharmacy, Doctor of (Pharm.D.)/ Pharmaceutical Sciences, Master of Science (M.S.) [combined]

The School of Pharmacy offers a Pharm.D./Master of Science (M.S.) in Pharmaceutical Sciences as a combined graduate/professional degree program that teaches individuals to analyze and solve problems of interest to pharmacists. Students develop a broad range of skills by taking classes and working closely with faculty. Since the degree is offered concurrently with the professional pharmacy degree, certain efficiencies can be realized that permit students to graduate sooner than might be expected; although, this degree may require up to two years of study beyond the Pharm.D. program depending on the student's educational background and chosen area of study. Students will take the required Pharm.D. curriculum, with selected substitutions of required courses with graduate-level courses, in addition to the graduate curriculum.

In their first two years (P-1 and P-2), the Pharm.D./M.S. students will complete the required Pharm.D. curriculum while attending research seminars and possibly pursuing graduate courses as electives. After admission into the graduate program, students will take required graduate courses in lieu of Pharm.D. courses during the P-3 (G-1) year followed by graduate research during the summer. During the G-2 through G-4 years, students will complete the graduate course requirements and the required Pharm.D. clerkships and work on their graduate research projects. Stipends and tuition may be provided for students serving as graduate teaching or research assistants. During that period, the student will follow procedures prescribed for students in the pharmaceutical sciences.

Students can focus on the following research areas within the School of Pharmacy: pharmacotherapy, pharmacokinetics, biopharmaceutical analysis, pharmaceutics/physical pharmacy, pharmacy administration and medicinal chemistry. Also, students may focus on the following research areas within the School of Medicine: pharmacology and toxicology. The choice of research area determines the required graduate course work.

The combined Pharm.D./M.S. program in the School of Pharmacy is a full-time program of professional education that offers an opportunity for advanced study in pharmaceutical sciences. The program recognizes the need for pharmacy practitioners with excellent research skills in clinical, academic, industrial and regulatory environments. The combined program is designed to take advantage of efficiencies in both the Pharm.D. and the M.S. programs and allows students to complete the program requirements of both programs after five or six years. Both degrees are awarded at the same graduation ceremony.

**Apply online at** [graduate.admissions.vcu.edu](http://graduate.admissions.vcu.edu) (<http://www.graduate.admissions.vcu.edu>).

### Application to the Pharm.D./M.S. program

Students may be admitted into the combined program before or during their first two years of enrollment in the Pharm.D. program. Applicants

must demonstrate a good academic record, experience in research (e.g., during summer research fellowships with the school's graduate faculty) and successful completion of the Graduate Record Examination. Additionally, each applicant must be sponsored by a graduate faculty member.

#### Graduate program director

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#### Additional contact

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**Program website:** [pharmacy.vcu.edu](http://www.pharmacy.vcu.edu) (<http://www.pharmacy.vcu.edu>)

## Pharmacy, Doctor of (Pharm.D.)/Public Health, Master of (M.P.H.) [combined]

The School of Pharmacy and the Division of Epidemiology in the Department of Family Medicine and Population Health in VCU's School of Medicine offer a dual-degree program through which students earn both Pharm.D. and M.P.H. degrees. This dual-degree program offers students the opportunity to achieve a Doctor of Pharmacy while also learning about research and the importance of population health. This five-year program requires students to spend the fourth year of the Pharm.D. program pursuing the M.P.H. degree, after which they transition back to pharmacy for advanced practice experiences.

Students are required to take 36 of the 45 credits required for the M.P.H. The M.P.H. field study (internship) requirement will be satisfied by Pharm.D. special advanced practice experiences in community health during the fifth year of the program.

Students complete two credits of practical skills work during the P3 year, followed by full immersion in the M.P.H. curriculum in the P4 year. The required M.P.H. capstone project will be completed in a community setting during the P5 year; it will involve a comprehensive project that serves the needs of a professional public health organization and typically involves the development of one or more deliverables. Examples include a disease surveillance project, a needs assessment or program evaluation, or development of a comprehensive suite of patient health education or medication safety materials.

## VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the **Graduate School website** and academic regulations in individual school and

department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

**Visit the Graduate study section for additional information on academic regulations for graduate students.**

## Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

**Visit the Graduate study section for additional information on degree candidacy requirements.**

## Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

**Visit the Graduate study section for additional information on graduation requirements.**

## Other information

### School of Medicine graduate program policies

The School of Medicine provides policies applicable to all programs administratively housed in the school. Information on **master's programs** is available elsewhere in this chapter of the Graduate Bulletin.

**For M.P.H., apply online at [sophas.org](http://www.sophas.org)** (<http://www.sophas.org>).  
**Pharm.D. applicants follow instructions on the School of Pharmacy website** (<http://pharmacy.vcu.edu/programs/pharmd/prospective/apply>).

Please review the admission requirements for each stand-alone degree (Master of Public Health and Doctor of Pharmacy) in the VCU Graduate and Professional Bulletins to learn the specific application requirements for each program.

## Curriculum requirements

### M.P.H. courses

#### Required

BIOS 543	Statistical Methods I	3
BIOS 544	Statistical Methods II	3
EPID 547	Applied Data Analysis Lab I	1.5
EPID 548	Applied Data Analysis Lab II	1.5
EPID 571	Principles of Epidemiology	3

EPID 580	Public Health Ethics	1
EPID 593	MPH Practicum	2
EPID 604	Principles of Environmental Health	3
EPID 694	MPH Capstone Project	3
HCPR 601	Introduction to Health Policy	3
SBHD 605	Introduction to Social and Behavioral Health	3

**M.P.H. electives**

Select a minimum of nine credit hours of elective course work selected according to an area(s) of interest in public health. These may include the following:

BIOS 571	Clinical Trials	
EPID 600	Introduction to Public Health	
EPID 601	Contemporary Issues and Controversies in Public Health	
EPID 603	Public Health Policy and Politics	
EPID 620	Cancer Epidemiology	
EPID 622	Maternal and Child Health	
EPID 624	Chronic Disease Epidemiology	
EPID 646	Epidemiology of Psychiatric and Substance Use Disorders	
EPID 648	Behavioral Epidemiology	
SBHD 608	Health Communication	
SBHD 632	Health Disparities and Social Justice	
SBHD 636	Community-based Participatory Research	

Total Hours 36

**Pharm.D. courses**

IPEC 501	Foundations of Interprofessional Practice	1
IPEC 502	Interprofessional Quality Improvement and Patient Safety	1
MEDC 527	Basic Pharmaceutical Principles for the Practicing Pharmacist	3
MEDC 533	Pharmacognosy	2
MEDC 542	Biotechnology-derived Therapeutic Agents	1
MEDC 543	Clinical Chemistry for the Pharmacist	2
MEDC 553	Clinical Therapeutics Module: Introduction to Medicinal Chemistry	1
PCEU 507	Pharmaceutics and Biopharmaceutics I	3
PCEU 508	Pharmacokinetics	3
PCEU 509	Pharmaceutics and Biopharmaceutics II	3
PCEU 615	Applied Pharmacokinetics	2.5
PHAR 509	Evidence-Based Pharmacy I: Introduction to Pharmacy Information Skills	2
PHAR 513	Contemporary Pharmacy Practice	2
PHAR 523	Foundations I	1.5
PHAR 524	Foundations II	1.5
PHAR 526	Community Pharmacy Practice	2

PHAR 529	Clinical Therapeutics Module: Introduction to Special Populations	2
PHAR 530	Introductory Pharmacy Practice Experience: Community Practice	4
PHAR 532	Introductory Pharmacy Practice Experience: Hospital Practice	3
PHAR 533	Introductory Pharmacy Practice Experience: Service-learning	0.5
PHAR 534	Foundations III	1
PHAR 535	Foundations IV	1
PHAR 540	Self-Care and Alternative and Complementary Treatments	2.5
PHAR 541	Patient Assessment in Pharmacy Practice	2
PHAR 544	Clinical Therapeutics Module: Cardiovascular	4.5
PHAR 545	The U.S. Health Care System	2
PHAR 547	Managing Professional Patient-centered Practice	1.5
PHAR 549	Pharmacogenetics	1
PHAR 550	Pharmacy Practice Research	3
PHAR 555	Clinical Therapeutics Module: Endocrinology	2.5
PHAR 556	Clinical Therapeutics Module: Neurology	4
PHAR 565	Evidence-based Pharmacy II: Research Methods and Statistics	2.5
PHAR 566	Evidence-based Pharmacy III: Drug Literature Evaluation	2
PHAR 602	Clinical Therapeutics Module: Psychiatry	3
PHAR 603	Clinical Therapeutics Module: Respiratory/Immunology	3
PHAR 604	Clinical Therapeutics Module: Infectious Diseases	4.5
PHAR 605	Clinical Therapeutics Module: Hematology/Oncology	2.5
PHAR 606	Clinical Therapeutics Module: Nephrology/Urology	2
PHAR 607	Clinical Therapeutics Module: Dermatology/EENT	2
PHAR 618	Clinical Therapeutics Module: Gastrointestinal/Nutrition	2.5
PHAR 619	Clinical Therapeutics Module: Women's Health/Bone	2
PHAR 620	Clinical Therapeutics Module: Critical Care/Toxicology	2.5
PHAR 621	Pharmacoeconomics	2
PHAR 622	Epidemiology and Pharmacy Practice	2
PHAR 640	Foundations V	1
PHAR 645	Foundations VI	1
PHAR 652	Health Promotion and Communication in Pharmacy Practice	2.5
PHAR 660	Community Pharmacy Practice Management II	2
PHAR 661	Institutional Pharmacy Management	2

PHAR 724	Pharmacy Law	2.5
PHAR 760	Acute Care Pharmacy Practice I	5
PHAR 761	Advanced Hospital Pharmacy Practice	5
PHAR 762	Geriatrics Pharmacy Practice	5
PHAR 763	Ambulatory Care Pharmacy Practice	5
PHAR 765	Elective I	5
PHAR 766	Elective II	5
PHAR 768	Advanced Community Pharmacy Practice	5
PHAR 771	Student Pharmacist Professionalism	1
PHAR 773	Acute Care Pharmacy Practice II	5
PHTX 606	Clinical Therapeutics Module: Introduction to Pharmacology (Pharmacy) (Pharmacy)	1
Electives		4
Total Hours		155.5

## Total graduate credit hours required (minimum) 191

### Typical plan of study

Many students often end up taking more than the minimum number of hours required for a degree program. The total number of hours may vary depending upon the program, nature of research being conducted by a study or in the enrollment or funding status of the student. Students should refer to their program websites and talk with their graduate program directors or advisers for information about typical plans of study and registration requirements.

#### Graduate program directors

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**Program website:** [pharmacy.vcu.edu](http://www.pharmacy.vcu.edu) (<http://www.pharmacy.vcu.edu>) and [familymedicine.vcu.edu/education/graduate/dual-degrees](http://www.familymedicine.vcu.edu/education/graduate/dual-degrees) (<http://www.familymedicine.vcu.edu/education/graduate/dual-degrees>)

# FIRST-PROFESSIONAL COURSES

## School of Dentistry

### Dental Special Topics (DENS)

**DENS 503. Introduction to Behavioral Science in Dentistry. 1 Hour.**

Semester course; 16 didactic hours. 1 credit. Prerequisite: enrollment within a School of Dentistry degree program. Course consists of online lectures, discussion board activities, assigned readings and interactive activities centering on understanding health disparities and access to care issues as they relate to patient-centered care among diverse populations. Graded as pass/fail.

**DENS 510. EVIDENCE-BASED DENTISTRY. 1.5 Hour.**

**DENS 513. Foundations of Effective Interpersonal Skills During Patient Interactions I. 1.5 Hour.**

Semester course; 24 didactic hours. 1.5 credits. Prerequisite: enrollment within a School of Dentistry degree program. Course consists of online and face-to-face lectures, skill-building activities, student role-plays and a standardized patient assessment. Students will work both individually and in small groups for discussion and role-plays utilizing foundational motivational interviewing techniques.

**DENS 515. Clinical Skills I. 1 Hour.**

Semester course. 1 credit. Provides didactic information and practice opportunities to familiarize first-year dental students with patient management and selected clinical skills. The course runs concurrently with courses in periodontics and operative dentistry to provide the basis for initial entry into the dental clinic and patient care.

**DENS 516. Clinical Skills II. 3.5 Hours.**

4 laboratory and 15 clinical hours. 3.5 credits. Prerequisite: DENS 515. The second in a four-part series of courses designed to prepare dental students for entry into the clinical training environment. Students' learning experiences include didactic lectures, clinical practice and observation, and simple patient-based interactions and/or procedures performed while assisting more senior dental students. Enrollment is restricted to admitted dental students.

**DENS 524. Evidence-based Dentistry and Critical Thinking I. 1 Hour.**

1 credit. The fundamentals of evidence-based dentistry will be taught. Students will gain the ability to identify, retrieve and critically appraise dental literature.

**DENS 550. Update in Practice Administration. 1 Hour.**

Semester course; 15 seminar hours. 1 credit. Lectures and seminar discussion on the business aspects of contemporary specialty dental practice, with emphasis on entry into practice, associateship contracts, financing arrangements, risk management and employee relations.

**DENS 580. Biostatistics and Research Design in Dentistry. 2 Hours.**

Semester course; 30 seminar hours. 2 credits. Must be taken for two consecutive semesters. Provides the advanced education student in dentistry an appreciation for the need for and uses of fundamental biostatistical methods in dental applications. Appropriate research designs for answering research questions of importance in dentistry will be examined. An array of biostatistical methods that are commonly used in the dental literature and by agencies such as the FDA to evaluate new dental products and methodologies are discussed.

**DENS 603. Foundations of Effective Interpersonal Skills During Patient Interactions II. 1 Hour.**

Yearlong course; 16 didactic hours. 1 credit. Prerequisite: DENS 513. The two-semester course consists of online and face-to-face lectures, skill-building activities, student role-plays and a standardized patient assessment (spring). Students will work both individually and in small groups for discussion and role-plays of cases utilizing foundational motivational interviewing techniques. Students receive CO grading in the fall semester and a letter grade upon completion.

**DENS 604. Selective Special Topics in Oral Research I. 0.5 Hours.**

Semester course; 0.5 lecture hours. 0.5 credits. Open to any dental student with a minimum GPA of 3.0 and in good academic standing. This introductory course will introduce students to the basics of research and innovation. Lectures will provide a framework for students to pose a research question, formulate a methodology and conduct experiments. Assignments will introduce students to analyzing and presenting research. Students will also learn the fundamentals of innovation protection. Graded as pass/fail.

**DENS 605. Selective Special Topics in Oral Research II. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Prerequisite: DENS 604 or permission of instructor. Enrollment restricted to dental students with a minimum GPA of 3.0 and in good academic standing. Students will be introduced to writing a fellowship proposal. Lectures and workshops will guide students through the process of applying for an AD Williams fellowship. Students will also begin their independent research. Graded as pass/fail.

**DENS 606. Selective Special Topics in Oral Research III. 0.5-2 Hours.**

Semester course; variable hours (3 research hours per credit). 0.5-2 credits. May be repeated for a maximum total of 16 credits. Prerequisite: DENS 605 or permission of instructor. Enrollment restricted to dental students with a minimum GPA of 3.0 and in good academic standing. Independent study and individual research experiences will be conducted under the guidance of a research mentor. Graded as pass/fail.

**DENS 611. Introduction to Professionalism, Ethics and Ethical Decision-making. 1 Hour.**

Semester course. 1 credit. Provides a review of the foundation of ethical principles, concepts of professionalism, professional student behavior and responsibilities, ethical issues guiding dentistry, and the development of an ethical decision-making model.

**DENS 619. Evidence-based Dentistry and Critical Thinking II. 1 Hour.**

1 credit. The fundamentals of evidence-based dentistry will be taught. Students will gain the ability to identify, retrieve and critically appraise dental literature.

**DENS 621. Dental Occlusion. 1 Hour.**

Semester course; 1 lecture and 3 laboratory hours. 1.0 credit lecture with 1.0 credit laboratory. Consists of lectures and laboratory components which expand on the basic concepts that were presented in the fundamentals of occlusion course. Focuses on the examination, diagnosis and treatment planning of various occlusal problems. The student will learn the skills needed to analyze the dental occlusion of patients and to plan successful occlusal therapy, including restorative procedures and fixed prosthodontics treatment.

**DENS 623. Clinical Skills IV. 7 Hours.**

Semester course; lecture and clinic contact hours. 7 credits. Fourth in the clinical skills series, this course is designed to develop students' familiarity with and confidence in the clinical setting prior to beginning clinical care of their own patient pool. Students will have the opportunity to assist more senior students within their practice group and to perform simple operative procedures.

**DENS 625. Clinical Skills III. 5 Hours.**

Semester course; lecture and clinic contact hours. 5 credits. Designed to evaluate the student's ability to perform specific clinical skills and to provide a variety of experiences to prepare for entry to the school's student clinical practice. Case-based, problem-oriented histories will provide the foundation for development of phased treatment plans and a series of mannequin exercises. Students will have simulated and patient-based experiences during assigned rotations in the school's patient care clinics. Experiences are provided to enhance the student's communication skills as an oral health professional functioning as a component of a health care team. Rotations are coordinated with the spring clinical skills IV course.

**DENS 628. Evidence-based Patient Care I. 1 Hour.**

1 credit. Students will learn to apply the fundamentals of evidence-based dentistry to practical application in patient care.

**DENS 630. Orthodontic-Periodontic-AEGD Conference. 0.5 Hours.**

Semester course; 8 seminar hours. 1 credit. Must be taken every semester of the program. Discusses treatment planning and analysis of patients requiring combined orthodontic, periodontic and restorative care. Presents topics of interest to orthodontists, periodontists and general dentists. Graded S/U/F.

**DENS 642. Fundamentals of Treatment Planning. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Open only to second-year D.D.S. students. Designed to build upon the student's prior exposure to discipline-based treatment planning concepts. Students will develop an integrated, multidisciplinary approach to urgent and oral disease control phase patient treatment planning. The course will also cover the use of information technology applications to document treatment plans and strategies for effectively communicating treatment plans to patients. Graded P/F.

**DENS 651. Preclinical General Practice Dentistry Lab. 5 Hours.**

Semester course; 200 laboratory hours. 5 credits. Admission into VCU International Dentist Program required. Designed to prepare and transition a class of internationally trained dentists into the third year of dental school at VCU. All aspects of preclinical dentistry will be covered in this basic preparatory laboratory course. Graded P/F.

**DENS 652. Preclinical General Practice Dentistry Lecture. 9 Hours.**

Semester course; 144 lecture hours. 9 credits. Admission into VCU International Dentist Program required. Designed to prepare and transition a class of internationally trained dentists into the third year of dental school at VCU. All aspects of preclinical dentistry will be covered in this basic preparatory lecture course. Graded P/F.

**DENS 653. Clinical General Practice Dentistry Lecture. 6 Hours.**

Semester course; 96 lecture hours. 6 credits. Admission into VCU International Dentist Program required. Comprises clinical experiences prior to the third year of professional study. This course is designed to enhance the student's clinical experience in patient management, treatment planning, utilization of dental auxiliaries, consultation with other health care professionals and referral to appropriate dental specialists. Specialty subjects and techniques will be combined to form a general dentistry model for patient care. Guidance from faculty will encourage the student to synthesize and integrate materials, methods and techniques from previous courses into a logical and systematic approach to the delivery of oral health care. Small-group seminars will be provided to enhance the student's transition to dental health care at VCU. Graded P/F.

**DENS 654. Clinical General Practice Dentistry Lab. 5 Hours.**

Semester course; 200 laboratory hours. 5 credits. Enrollment requires admission into the VCU International Dentist Program. Prerequisite: DENS 652. Comprises clinical experiences prior to the third year of professional study. This course is designed to enhance the student's clinical experience in patient management, treatment planning, utilization of dental auxiliaries, consultation with other health care professionals and referral to appropriate dental specialists. Specialty subjects and techniques will be combined to form a general dentistry model for patient care. Guidance from faculty will encourage the student to synthesize and integrate materials, methods and techniques from previous courses into a logical and systematic approach to the delivery of oral health care. Small-group seminars will be provided to enhance the student's transition to dental health care at VCU. Graded pass/fail.

**DENS 655. Preclinical General Practice Dentistry for Internationally Trained Dentists. 6 Hours.**

Yearlong course; 6 lecture hours. 6 credits. Designed to support the integration of a class of internationally trained dentists into the second year at the VCU School of Dentistry, this course addresses special topics of concern for this cohort. The course will cover core didactic material and laboratory activities and will strengthen areas that have been previously identified as opportunities for growth in this student population. Students receive CO grading in the fall and a pass or fail grade and earned credit in the spring.

**DENS 660. Interdisciplinary Care Conference. 0.5 Hours.**

Continuing course; 7 hours. 1 credit. Must be taken every year of the program. Provides a forum for formal presentation and group discussion of the diagnosis, treatment planning, delivery and prognosis of interdisciplinary dental care. Designed for continuing enrollment for two academic semesters; graded CO in the fall and a final grade of Pass or Fail in the spring.

**DENS 699. Thesis Guidance. 1-2 Hours.**

Semester course; 18-36 seminar hours. 1-2 credits. Must be taken every semester of the program. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis, and prepares a manuscript for publication.

**DENS 700. Basic Sciences and Graduate Dentistry. 3 Hours.**

First year; spring course; 45 hours. 3 credits. Advanced level survey of topic areas related to the principles and practices of dentistry including: oral pathology, biochemistry and physiology, infection and immunity, pharmacology, biomaterials and genetics.

**DENS 701. Remediation in Dentistry. 1-7 Hours.**

Semester course; variable contact hours. Variable credits. This course is not part of the core D.D.S. curriculum. Students who must remediate a course, for any reason, will be enrolled in this course during their remediation period and credit hours will be assigned consistent with the course being remediated. A grade of pass/fail will be assigned at the completion of the remediation period.

**DENS 702. Dental Clinics. 1-12 Hours.**

Semester course; variable hours, clinical contact. 1-12 credits. May be repeated for credits. Restricted to students enrolled in D.D.S. program. This course is designed for students who need to remediate clinical experiences, make up clinical experiences or are off cycle with clinical work for any other reason. Credit hours, learning objectives and exact expectations/responsibilities will be identified in an individualized education plan for each student as determined by the school's deans for clinical education and academic affairs. Graded pass/fail.

**DENS 703. Advanced Interpersonal Communications I. 1 Hour.**

Yearlong course; 16 didactic hours. 1 credit. Prerequisite: enrollment within a School of Dentistry degree program. This is a two-semester course which introduces third-year dental students to goal setting/change plans and advanced motivational interviewing techniques. The course consists of online and face-to-face lectures, skill-building activities, student role-plays and a patient assessment (spring). Students receive CO grading in the fall semester and a letter grade upon completion.

**DENS 713. Advanced Interpersonal Communications II. 1 Hour.**

Yearlong course; 16 didactic hours. 1 credit. Prerequisite: Enrollment within a School of Dentistry degree program. This is a two-semester course for fourth-year dental students to integrate behavioral science content, advanced motivational interviewing techniques and emotional intelligence skills into professional practice. The course consists of online and face-to-face lectures, skill-building activities, student role-plays and a patient assessment (fall). Students receive CO grading in the fall semester and a letter grade upon completion.

**DENS 730. Dental Practice Management III. 1 Hour.**

Semester course; 1 credit. The third in a series of four courses required over the duration of the four-year DDS curriculum. The series will prepare the dental graduate for making decisions about the type of practice to pursue, planning to establish or purchase a practice and, ultimately, managing it once in operation. Topics covered are those appropriate to the third-year dental student and may include, but are not limited to, marketing a practice, selecting the right location, ergonomics and managing the dental office. Graded as P/F.

**DENS 735. Patient Management and Professional Conduct. 2.5 Hours.**

Semester course; clinical contact hours. 2.5 credits. May be repeated for credit. Designed for third-year dental students to understand and practice the concepts of ethical conduct, patient management, risk management and professional responsibility. This course is based upon the application of the VCU School of Dentistry Code of Professional Conduct, the ADA Principles of Ethics and Code of Professional Conduct, and the School of Dentistry's Patient Bill of Rights in the clinical setting and is designed to help the dental student strive to do what is right for their patients, now and into the future.

**DENS 740. Dental Practice Management IV. 1 Hour.**

Semester course; 1 credit. The fourth in a series of four courses required over the duration of the four-year DDS curriculum. The series will prepare the dental graduate for making decisions about the type of practice to pursue, planning to establish or purchase a practice and, ultimately, managing it once in operation. Topics covered are those appropriate to the senior dental student and may include, but are not limited to, writing a business plan and understanding the current economy and its impact on dental practice. Graded as P/F.

**DENS 745. Patient Management and Professional Conduct. 2.5 Hours.**

Semester course; clinical contact hours. 2.5 credits. May be repeated for credit. Designed for fourth-year dental students to understand and practice the concepts of ethical conduct, patient management, risk management and professional responsibility. This course is based upon the application of the VCU School of Dentistry Code of Professional Conduct, the ADA Principles of Ethics and Code of Professional Conduct, and the School of Dentistry's Patient Bill of Rights in the clinical setting and is designed to help the dental student strive to do what is right for their patients, now and into the future.

**DENS 752. Clinical General Practice Dentistry Yearlong course; 7-8 clinic sessions per week. 14.5 credits. Enrollment restricted to fourth-year dental students. Course encompasses all clinical patient care instruction within the School of Dentistry group practices. This course is designed to enhance the student's clinical experience in patient management, treatment planning, utilization of dental auxiliaries, consultation with other health care professionals and referral to appropriate dental specialists.. 14.5 Hours.**

**DENS 762. Clinical Service-learning. 6 Hours.**

Yearlong course; 50 clinical sessions. 6 credits. A course-based, credit-bearing educational experience in which students participate in an organized service activity that meets community-identified needs. During the course, students are assigned rotations in clinical practice settings in underserved areas. In these settings, students are exposed to patients of varied ethnic, socioeconomic and demographic backgrounds, as well as special patient populations not typically encountered in the School of Dentistry clinics. Students have the opportunity to make oral health care more accessible to marginalized groups while continuing clinical education. Throughout this unique learning experience students are exposed to the benefits of potential practice in public health dentistry. Students will reflect on the service activity to increase understanding and application of course content and to enhance a sense of civic responsibility. Course graded as CO with no credit for fall semester; P/F and credit assigned for spring semester.

**Endodontics (ENDO)****ENDO 522. Introduction: Specialty of Endodontics. 2 Hours.**

Semester course; 96 laboratory hours. 2 credits. Restricted to first-year students. Utilizes laboratory exercises to review basic concepts and introduce the more complex technical procedures required to practice the clinical specialty of endodontics.

**ENDO 530. Advanced Oral Pathology. 1 Hour.**

Semester course; 13 seminar hours. 1 credit. Provides through a series of seminars, an in-depth knowledge of those specific areas of oral pathology that apply to endodontics.

**ENDO 532. Management of Medical Emergencies in the Dental Office. 1 Hour.**

Semester course; 20 seminar hours. 1 credit. Provides through a series of seminars, an in-depth level of knowledge in the management of medical emergencies in the dental office.

**ENDO 560. Endodontic Therapy Lectures. 3.5 Hours.**

Semester course; 58 lecture hours. 3.5 credits. Restricted to first-year students. Presents a series of lectures on clinical endodontic topics in order to familiarize the students with clinical endodontic procedures either in conjunction with or prior to the "Endodontic Topic Literature Reviews" on these specific clinical topics.

**ENDO 622. Principles of Endodontics. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Covers the basic principles of endodontics in preparation for clinical endodontics.



**ENDO 623. Principles of Endodontics Lab. 1.5 Hour.**

Semester course; 4 laboratory hours. 1.5 credits. This lab course teaches the basic technical skills of endodontics in preparation for clinical endodontics.

**ENDO 650. Endodontic Topic Literature Review. 3.5 Hours.**

Semester course; 58 seminar hours. 3.5 credits. May be repeated for credit. Must be taken every semester of the program. Reviews topic literature pertaining to the scientific basis for endodontic procedures and the materials and techniques utilized in the clinical practice of endodontics. Discusses content of the reviewed literature and critically evaluates by means of abstracts and study questions.

**ENDO 652. Endodontic Clinical Seminars. 1.5 Hour.**

Semester course; 28 seminar hours. 1.5 credits. May be repeated for credit. Must be taken every semester of the program. Requires students to present a seminar once each month in which difficult diagnostic cases, patient management problems and complex treatment cases are critiqued and treatment options discussed.

**ENDO 654. Endodontic Management of the Medically Compromised Patient. 1 Hour.**

Semester course; 14 seminar hours. 1 credit. Must be taken for two consecutive semesters. Provides students, through a seminar series, with an in-depth level of knowledge in the endodontic management of the medically compromised patient.

**ENDO 656. Endodontic Current Literature Review. 1 Hour.**

Semester course; 18 seminar hours. 1 credit. Must be taken every semester of the program. Provides a review of current journal literature that pertains to the scientific basis for endodontic procedures, materials and techniques currently being used in the clinical practice of endodontics. Discusses and critically evaluates the content of the reviewed literature. Requires written abstracts of all reviewed articles.

**ENDO 680. Clinical Endodontics. 1-5 Hours.**

Semester course; 153 clinical sessions. Variable for 1-5 credits. Must be taking both fall and spring of the first and second years of the program for 5 credits each semester. May be taken in additional semesters as needed to complete clinical training; credit will vary based on circumstances. Permits students to receive supervised training in every type of clinical endodontic procedure. Provides students with experience in the management and treatment of cases which are the same types of complex non-surgical and surgical cases treated in a specialty practice of endodontics.

**ENDO 700. Senior Selective in Advanced Clinical Endodontics. 1 Hour.**

Semester course; 4 clinical hours per week. 1 credit. Prerequisites: successful completion of ENDO 622 (sections .01 and .02), ENDO 731, ENDO 739 and permission of the course director. This clinical course is designed to develop advanced skills in treating endodontic cases beyond the scope of those expected in basic clinical competency of a dental student.

**ENDO 731. Endodontic Therapy. 1 Hour.**

Semester course; 1 lecture contact hour. 1 credit. An application course designed for the student to gain experience and demonstrate proficiency in the application of clinical endodontic knowledge to the diagnosis and management of complex clinical endodontic problems. Emphasis is placed on differential diagnosis and management of clinical endodontic problems. This course builds on the principles of diagnosis and treatment of disease of the pulp and periradicular tissues and injuries of the dental pulp. This course continues to place emphasis on the prevention of disease and maintenance of the normal pulpodentin complex.

**ENDO 739. Clinical Endodontics III. 1.5 Hour.**

Yearlong clinical course. 1.5 credits. Designed to develop clinical skills and provide experience in the diagnosis, treatment planning, treatment, prognosis, follow-up care and clinical patient management in cases involving the pulp and periradicular tissues. Emphasis is placed on the management of common clinical problems that may be encountered in the general practice of dentistry. This course emphasizes and elaborates on the rationale and treatment techniques presented in the D-2 didactic and laboratory course.

**ENDO 749. Clinical Endodontics IV. 1.5 Hour.**

Yearlong course; 1 clinic session per week. 1.5 credits. This course is designed to enhance the student's clinical experience in the field of endodontics, to include patient management, treatment planning, endodontic treatment modalities, consultation with other health care professionals and referral to appropriate dental specialists. Emphasis is placed on the management of common clinical endodontic problems that may be encountered in the general practice of dentistry. The course will run the spring and fall semester of the dental student's fourth year. Guidance from faculty will encourage the student to synthesize and integrate techniques taught in previous endodontic courses and labs into a logical and systematic approach to the delivery of quality endodontic care to the patients. Students receive CO grading in the fall and a pass or fail grade and earned credit in the spring.

**General Practice (GENP)****GENP 511. Dental Anatomy. 1.5,2.5 Hour.**

Semester course; 2 lecture and 4.5 laboratory contact hours. 2.5 credits lecture and 1.5 credits lab. A lecture and laboratory course pair designed to develop the student's knowledge of the morphology and anatomical features of the human adult dentition.

**GENP 512. Operative Dentistry Lecture. 4 Hours.**

Yearlong course; 67 lecture contact hours. 4 credits. Paired with GENP 513, the courses consist of lectures and laboratory exercises, including both virtual reality-based training and conventional mannequin simulation sessions. Information is presented regarding caries as a disease process, and students are presented with the knowledge and develop the skills necessary to treat the disease with both non-invasive and invasive operative treatment techniques. Extensive didactic instruction and laboratory simulation experience is provided in tooth preparation and restoration. Experience is also provided concerning properties, chemistry and manipulation of the various direct dental restorative materials used to restore teeth to their correct anatomical and functional form. Students receive a grade of CO for fall, with a grade and all credit hours earned in spring.

**GENP 513. Operative Dentistry Laboratory. 4.5 Hours.**

Yearlong course; 213 laboratory contact hours. 4.5 credits. Paired with GENP 512, the courses consist of lectures and laboratory exercises, including both virtual reality-based training and conventional mannequin simulation sessions. Information is presented regarding caries as a disease process, and students are presented with the knowledge and develop the skills necessary to treat the disease with both non-invasive and invasive operative treatment techniques. Extensive didactic instruction and laboratory simulation experience is provided in tooth preparation and restoration. Experience is also provided concerning properties, chemistry and manipulation of the various direct dental restorative materials used to restore teeth to their correct anatomical and functional form. Students receive a grade of CO for fall, with a grade and all credit hours earned in spring.

**GENP 514. Fundamentals of Occlusion. 2 Hours.**

Semester course; 1 lecture and 3 laboratory contact hours. 2.0 credits. Covers theories of occlusion, foundational concepts and fundamental lab skills essential for developing an understanding of occlusion. Through this course students begin to develop their working understanding of the concept of occlusion.

**GENP 552. Emergency Clinic. 1 Hour.**

Semester course; clinical hours. 1 credit. Part of the AEGD curriculum, students must enroll in this course for two consecutive semesters for a total of 2 credits. Students learn how to identify and manage emergency care needs of patients during evening and weekend hours when VCU dental practices are closed.

**GENP 558. General Dentistry Seminar. 1 Hour.**

Semester course; 1 seminar hour. 1 credit. Part of the AEGD curriculum, students must enroll in this course for two consecutive semesters for a total of 2 credits. Students will participate in discussions of resident patient cases and relative current literature.

**GENP 566. Specialty Lecture Seminar Series. 1 Hour.**

Semester course; 1 seminar hour. 1 credit. Part of the AEGD curriculum, students must enroll in this course for two consecutive semesters for a total of 2 credits. Covers a range of dental interdisciplinary topics and is designed to develop advanced critical thinking skills in AEGD residents.

**GENP 580. AEGD Clinic. 1-6 Hours.**

Semester course; clinical hours. 6 credits. Part of the AEGD curriculum, students must enroll in this course for two consecutive semesters for a total of 12 credits. Provides the core clinical patient care experience for residents in the Advanced Education in General Dentistry residency program.

**GENP 620. Cariology. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Designed to help students understand major aspects of cariology, which include the process of dental caries, diagnosis and detection, prevention and treatment, and clinical application.

**GENP 700. Selective in Aesthetic Dentistry. 1 Hour.**

Semester course; 16 seminar contact hours. 1 credit. Prerequisites: D4 standing and selection by course faculty. This course is designed to give the tools in understanding proper diagnosis, treatment planning and approaches in execution of the proposed treatment plan of more advanced multidisciplinary cases. Graded as pass/fail.

**GENP 739. Clinical Operative III. 5 Hours.**

Yearlong course; clinical contact hours. 5 credits. Will introduce dental students to the basic skills required for an entry-level general practitioner. This is a practical, hands-on two-semester clinical skill-development course where students learn to develop treatment plans for oral disease control in patients, restore teeth to form and function, manage emergency patients and manage an efficient recall system.

**GENP 742. Treatment Planning Seminar. 2 Hours.**

Semester course; 4 seminar hours. 2 credits. Designed to assist each D-3 student in the continual development of their treatment planning skills in particular and critical-thinking skills in general. The treatment planning seminar utilizes faculty-facilitated, case-based and problem-solving teaching strategies to provide each student with the opportunity to gain experience in developing and discussing treatment plans for both simulated and current clinical comprehensive care patients. The course will build on and solidify the concepts of diagnosis and treatment planning taught in the various D-1, D-2 and D-3 courses as well as augment student clinical experiences to date.

**Oral and Craniofacial Molecular Biology (OCMB)****OCMB 701. An Introduction to Oral Biology. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Restricted to students enrolled in the oral health research graduate program or by permission of the instructor. An overview course on the development, structures and tissues of the head and neck. Topics include craniofacial and dental development, cancers of the head and neck, the oral microbiome, immune responses in the oral cavity, the connection between oral and systemic diseases and recent advances in bioengineering for oral disease.

**OCMB 702. Oral Pathogenesis. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Restricted to students enrolled in the oral health research graduate program or by permission of the instructor. This course will provide a basic understanding of the nature of disease and current therapeutic approaches to bacterial, viral and molecular diseases of the head and neck and bone pathologies originating from development defects and/or trauma. Students will learn about the molecular causes of diseases and general approaches to understanding and treating disease.

**OCMB 703. Research Topics in Oral Biology. 1 Hour.**

Semester course; tutorials and assignments. 1 credit. Prerequisite: OCMB 701, OCMB 702 or permission of the instructor. Restricted to students enrolled in the oral health research graduate program. This course will provide an in-depth discussion of current research in head and neck diseases. Students will be expected to critically evaluate relevant literature, discuss approaches to solving research topics and begin to identify possible areas of research for their dissertation. Graded P/F.

**OCMB 704. Oral Biology Seminar Series. 1 Hour.**

Semester course; 1 seminar hour. 1 credit. This course will consist of a series of seminars by invited speakers addressing research topics in selected areas of oral health research and a series of student-led journal clubs. Graded P/F.

**OCMB 705. Oral Biology Oral Biology Directed Research. 1-15 Hours.**

Semester course; variable laboratory research hours. 1-15 credits. Restricted to students enrolled in the oral health research graduate program or by permission of the instructor. This course will provide practical laboratory experience in participating laboratories. Graded P/F.

**OCMB 706. Proposal Preparation. 1 Hour.**

Semester course; tutorials and lectures. 1 credit. Restricted to students enrolled in the oral biology graduate program or by permission of the instructor. This course will provide students with the opportunity to draft an NIH application. Graded P/F.

**OCMB 707. Research Skills and Career Development. 1 Hour.**

Semester course; tutorials and workshops. 1 credit. Restricted to students enrolled in the oral health research graduate program or by permission of the instructor. This course will provide students with the opportunity to develop skills required to conduct and communicate their research, including assessing literature and managing databases, poster and oral presentations, finding research funding, preparing for writing the thesis, and exploring career opportunities outside academia. Students receive CO grading throughout enrollment with a pass/fail grade and credit earned during the final semester.

**Oral Diagnostic Sciences (ORPT)****ORPT 540. Clinical Pathology Conference. 1 Hour.**

Semester course; seminar hours. 1 credit. Through this course, students develop advanced skills in the diagnosis and treatment of common oral pathologic findings.

**ORPT 621. Dental Radiology. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Designed to provide the predoctoral dental student with an introduction to the theory, principles and techniques of diagnostic imaging and lay the groundwork for future studies in diagnostic interpretation.

**ORPT 622. Oral Pathology. 3 Hours.**

Yearlong course; 3 lecture hours. 3 credits. A problem-solving/critical-thinking experience emphasizing the more common oral abnormalities. The soft tissue and osseous pathologic entities will be discussed individually as well as within differential diagnosis cluster. By the end of the course the student should, when presented with an abnormality, be able to establish a differential diagnosis, discuss the salient features and present a logical sequential approach to discovering the final diagnosis and management.

**ORPT 700. Senior Selective in Oral Diagnostic Sciences. 1 Hour.**

Semester course; 50 clinical and 4 didactic hours. 1 credit. Prerequisites: D4 class status in good standing with above average grades in ORPT 621, ORPT 622, ORPT 732, and permission of the course director. This selective will allow the student to experience a variety of activities in oral and maxillofacial radiology, medicine, atypical facial pain and histopathology.

**ORPT 732. Clinical Oral Pathology and Oral Medicine. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Designed to provide students with the knowledge to recognize, diagnose and treat the common diseases/conditions found in dental practice.

**ORPT 737. Radiology Rotation. 1.5 Hour.**

1.5 year course; clinical contact hours. 1.5 credits earned following completion of both ORPT 737 and OPT 747. This three-semester progressive clinical science course prepares the predoctoral dental student to be a competent practitioner of oral and maxillofacial radiographic technique and diagnostic interpretation.

**ORPT 747. Radiology Rotation. 1.5 Hour.**

1.5 year course; clinical contact hours. 1.5 credits earned following completion of both ORPT 737 and OPT 747. This three-semester progressive clinical science course prepares the predoctoral dental student to be a competent practitioner of oral and maxillofacial radiographic technique and diagnostic interpretation.

**Oral Surgery (ORSG)****ORSG 622. Introduction to Oral Surgery. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Designed to introduce the second-year student to basic principles in oral surgery. The course prepares the student for entry into the oral surgery clinical rotation.

**ORSG 700. Senior Selective in Oral and Maxillofacial Surgery. 1 Hour.**

Semester course; 46 clinical and 4 didactic hours. 1 credit. Prerequisites: successful completion of ORSG 622, 731, 733, 739, D4 class standing and permission of the course director. This elective will allow a qualified student the opportunity to observe and/or participate in a variety of activities in oral and maxillofacial surgery that extend beyond the standard undergraduate curriculum.

**ORSG 731. Medical Management of Emergency Care Dental Patients. 2 Hours.**

Semester course; 2 lecture contact hours. 2 credits. Students develop an understanding of systemic and medical conditions which may influence the provision of dental care by a provider. The course also is aimed at enabling students to incorporate the importance of medical conditions which directly impact dental treatment planning.

**ORSG 733. Principles of Oral and Maxillofacial Surgery. 1.5 Hour.**

Semester course; 1.5 lecture hours. 1.5 credits. A lecture series designed to provide a foundation of professional knowledge associated with the surgical skills to fully enable the student to diagnose, treat and, when necessary, refer oral and maxillofacial surgical problems encountered in general practice.

**ORSG 739. Clinical Oral Surgery III. 2.5 Hours.**

Yearlong course; 120 clinical hours. 2.5 credits. Entails clinical rotations through the OMS clinic. An entry-level clinical course designed to provide practical experience in basic oral surgery and observation of the more complex procedures performed by oral and maxillofacial surgeons. Students receive a grade of CO for fall, with a P/F grade and all credit hours earned in spring. Students receive a grade of CO for fall, with a P/F grade and all credit hours earned in spring.

**ORSG 749. Clinical Oral Surgery IV. 2 Hours.**

Yearlong course; 80 clinical contact hours. 2 credits. Provides the senior dental student with rotation-based clinical experience in which they further refine and develop their skills in clinical oral surgery and medical assessment of the patient for surgery. Cases treated by the senior student in this rotation are generally more complex (medically and surgically) than those treated in ORSG 739. Course graded as CO in the first semester with P/F grade awarded upon completion of second semester.

**Orthodontics (ORTH)****ORTH 532. Biomechanics: Theoretical Basis for Tooth Movement. 1 Hour.**

Semester course; 15 lecture/seminar hours. 1 credit. Introduces physical science of mechanics and engineering statics as applied to orthodontic force systems. Emphasizes equilibrium and the biological manifestation of force systems applied to the dentition and craniofacial skeleton.

**ORTH 620. Orthodontic Clinic for Non-orthodontic Graduate Students. 1 Hour.**

Semester course; 30 clinical sessions. 1 credit. Must be taken every semester of the program. Allows residents to diagnose and treat limited orthodontic problems with special emphasis on the primary and mixed dentitions. Includes, but is not limited to, anterior and posterior crossbites, space and tooth loss, transient or definitive crowding and tooth irregularities, oral habits, ectopic and other tooth eruption problems.

**ORTH 623. Orthodontics Lecture. 2 Hours.**

Semester course; 2 lecture contact hours. 2 credits. An introduction to orthodontics meant to provide second-year dental students with a basic understanding of the diagnosis and treatment of orthodontic problems. The emphasis will be on understanding basic, universally applicable orthodontic concepts rather than on learning specific details relating to particular treatment mechanisms or appliances. This is consistent with current trends in the specialty, which recognize that orthodontic solutions are often attainable by many routes, with a common goal of maximizing the functional, esthetic and stable end result. There will be an overview of growth and development, emphasizing how favorable or unfavorable growth may influence orthodontic diagnosis and treatment. A detailed description of the development of occlusion will also be presented with an emphasis on recognizing and diagnosing abnormalities related to tooth eruption and craniofacial growth.

**ORTH 650. Literature Review. 2 Hours.**

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Reviews classical articles in areas of special orthodontic interest. Establishes the state-of-the-art and existing information base. Gives special attention to research methodology and conclusions reached.

**ORTH 652. Growth and Development. 2 Hours.**

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Discusses the increases in size and complexity that occur in the craniofacial region including variations in proportionality and related variations in facial form and dental occlusion. Provides special emphasis on compensations in skeletal and soft tissue structures. Examines the basis for prediction of change.

**ORTH 654. Orthodontic Diagnosis and Treatment Planning. 2 Hours.**

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Considers and discusses available and theoretical options for clinical management of variations in facial form and dental occlusion.

**ORTH 656. Current Literature. 2 Hours.**

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Presents in a journal-club-format evaluation of current information in orthodontics and related disciplines. Includes special emphasis on research methodology and the contributions of current research to advances in orthodontics.

**ORTH 658. Analysis of Orthodontic Treatment. 1.5 Hour.**

Semester course; 22.5 seminar hours. 1.5 credits. Must be taken every semester of the program. Analyzes cephalometric and other objective measures of the outcomes of orthodontic therapy. Reviews treatment objectives with respect to actual changes effected in patients. Delineates changes resulting from therapy from normal variations in craniofacial development.

**ORTH 660. Orthognathic Conference. 1 Hour.**

Semester course; 15 seminar hours. 1 credit. Must be taken every semester of the program. Presents patients requiring coordinated orthodontic and oral surgery care. Emphasizes long- and short-term biologic stability of alterations in the structure and function of the craniofacial skeleton with increased emphasis on facial form and dental occlusion.

**ORTH 662. Craniofacial Anomalies. 1 Hour.**

Semester course; 15 lecture/seminar hours. 1 credit. Must be taken every semester of the program. Discusses the etiology and embryologic basis of congenital and acquired deformities in the craniofacial structures. Emphasizes syndromes with craniofacial manifestations and the diagnosis and treatment planning for patients with facial clefts.

**ORTH 664. Orthodontic Interactions with Generalists and Other Dental Specialties. 2 Hours.**

Semester course; 30 clinic/lecture/seminar hours. 2 credits. Must be taken every semester of the program. Provides supervised clinical experiences in treatment planning and treatment with general dental students and patients appropriate for general dental practices.

**ORTH 670. MASTERS THESIS - ORTHODONTICS. 2 Hours.****ORTH 680. Orthodontic Clinic. 1-6.5 Hours.**

Semester course; 195 clinic sessions. Variable for 1-6.5 credits. Must be taking both fall and spring of the first and second years of the program for 6.5 credits each semester. May be taken in additional semesters as needed to complete clinical training; credit will vary based on circumstances. Involves supervised experiences in treatment of a complete spectrum of normally occurring orthodontic problems in an environment simulating private practice. Graded P/F.

**ORTH 700. Senior Selective in Orthodontics. 4 Hours.**

Semester course; 4 clinical and 1 seminar hours per week. 4 credits. Prerequisites: successful completion of ORTH 623, ORTH 733, ORTH 739 and permission of the course director. A clinical and didactic course designed for students who wish to gain advanced knowledge of orthodontics in an environment simulating a practice setting. The course will include participation in seminars, clinical activities and hospital rotations for craniofacial patients. The course will extend over the fall and spring semesters and will provide an excellent preparation for students entering the private practice of dentistry or students seeking graduate education in the field of orthodontics. A maximum of four students will be chosen to participate in this selective each year. Graded CO for the fall semester and P/F for the spring.

**ORTH 733. Orthodontic Therapy. 1 Hour.**

Semester course; 1 lecture contact hour. 1 credit. Consists of didactic lectures, a continuation of ORTH 623.

**ORTH 739. CLINICAL ORTHO 3. 1 Hour.****Pediatric Dentistry (PEDD)****PEDD 511. General Anesthesia Rotation. 3 Hours.**

Semester course; 40 clinical sessions. 3 credits. Teaches general anesthesia with special emphasis in pediatrics. Allows students to become knowledgeable in pre-operative evaluation, risk assessment, assessing the effects of pharmacologic agents, venipuncture techniques, airway management, general anesthetic induction and intubation, administration of anesthetic agents, patient monitoring, prevention and management of anesthetic emergencies, recovery room management, postoperative appraisal and follow-up.

**PEDD 512. Growth and Development. 1 Hour.**

Semester course; 16 lecture/seminar hours. 1 credit. Lecture format provides foundational knowledge on the growth and development of the head and neck to include oral embryology and development of the dentition.

**PEDD 514. Introduction to Pediatric Dentistry. 2 Hours.**

Semester course; 30 lecture hours. 2 credits. Introduces material in pediatric dentistry. Involves didactic, clinical and laboratory portions.

**PEDD 572. Pediatric Dental Emergency Service. 2.5 Hours.**

Semester course; 30 clinical sessions. 2.5 credits. Must be taken for two consecutive semesters. Graduate students are scheduled for emergency services on a weekly basis. Offers experience in the assessment and management of orofacial trauma, dental pain and infections.

**PEDD 612. Seminar Series: Pediatric Dentistry and Medicine. 2 Hours.**

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Provides an arena for students to present seminars in either a clinical area or medical conditions of interest to pediatric dentists. Gives students practical experience in giving formal presentations and provides him/her with information related to clinical subject area(s) with medical conditions about which pediatric dentists should be knowledgeable.

**PEDD 620. Pediatric Medicine Rotation. 1.5 Hour.**

Semester course; 40 clinical sessions. 1.5 credits. Requires students to obtain and evaluate medical histories, parental interviews, system-oriented physical examinations, clinical assessments of healthy and ill patients, selection of laboratory tests and evaluation of data, evaluation of physical, motor and sensory development, genetic implications of childhood diseases, the use of drug therapy in the management of diseases and parental management through discussions and explanations.

**PEDD 622. INTRO-PEDIATRIC DENTISTRY. 2 Hours.****PEDD 640. Clinical Teaching. 2 Hours.**

Semester course; 25 clinical sessions. 2 credits. May be repeated for credit. Must be taken every semester of the program. Lectures and clinical instruction involving contact with third and fourth-year dental students. Provides teaching experience in diagnosis and treatment planning, restorative preparations and management of children's behavior.

**PEDD 650. Literature Review. 2 Hours.**

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Reviews literature related to all aspects of the pediatric patient. Emphasizes the ability students to discuss the content of the articles and to critically evaluate it. Stresses the integration of new material with previously discussed literature and collateral material. Uses the reading list from the American Board of Pediatric Dentistry.

**PEDD 654. Treatment Planning Seminar. 1 Hour.**

Semester course; 16 lecture/seminar hours. 1 credit. May be repeated for a total of four credits. Must be taken every semester of the program. Provides diagnosis and treatment planning of the child, adolescent and special patient. Follows up on records on completed cases, which also are presented and evaluated. Discusses the techniques employed and the justification of the treatment.

**PEDD 656. Current Literature Review. 1 Hour.**

Semester course; 16 lecture/seminar hours. 1 credit. May be repeated for credit. Discusses articles from recent publications relating to all aspects of pediatric dentistry. Covers and critically reviews the Policies and Guidelines of the American Academy of Pediatric Dentistry.

**PEDD 670. MASTERS THESIS-PEDIATRIC DENS. 2 Hours.****PEDD 680. Pediatric Dental Clinic. 1-4 Hours.**

Semester course; 120 clinical sessions. Variable for 1-4 credits. Must be taking both fall and spring of the first and second years of the program for 4 credits each semester. May be taken in additional semesters as needed to complete clinical training; credit will vary based on circumstances. Provides for the clinical management of pediatric dental patients. Provides experiences in the treatment of infants, preschool children, adolescent and special patients. Stresses pharmacological and non-pharmacological techniques and behavior management.

**PEDD 700. Senior Selective in Pediatric Dentistry. 1 Hour.**

Semester course; 4 clinical hours per week. 1 credit. Prerequisites: successful completion of PEDD 611 and PEDD 733 and permission of the course director. This is a clinical course that provides students with more advanced experiences and techniques in pediatric dentistry.

**PEDD 701. Selective in Special Care Dentistry. 1 Hour.**

Semester course; 4 clinical hours/week. 1 credit. Prerequisites: D4 standing and selection by course faculty. This course is designed to give the interested student clinical exposure to the comprehensive dental care of individuals who have special health care needs. Graded as pass/fail.

**PEDD 730. Special Care Dentistry. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Enrollment restricted to dental students with D3 standing. This course is designed to enhance the dental student's understanding of the complexities of providing care for individuals with special health care needs.

**PEDD 733. Advanced Pediatric Dentistry. 1 Hour.**

Semester course; 1 lecture contact hour. 1 credit. Designed to supplement and reinforce the student's knowledge of diagnosis, treatment planning and basic skills for management of the pediatric dental patient. This includes a review of basic pediatric clinical procedures and introduction to the treatment of pediatric patients with special needs.

**PEDD 739. Clinical Pediatric Dentistry III. 1 Hour.**

Yearlong course; 48 clinical hours. 1 credit. Clinical rotation course designed to introduce the student to the basics of clinical pediatric dentistry and to prepare the student for PEDD 749. Students receive CO grading in the fall semester and pass/fail grade upon completion.

**PEDD 749. Clinical Pediatric Dentistry IV. 0.5 Hours.**

Semester course; 29 clinical hours. 0.5 credits. Prerequisites: successful completion of all prior courses in pediatric dentistry and D4 class standing. This course is offered as a one-week clinical rotation during the senior year of the dental curriculum. Students will build upon and refine the skills developed during the D3 clinical experience. Pediatric dentistry is a unique experience because of the young patient population and psychological skills are centrally important to delivering patient care. The course has a strong emphasis on developing behavioral, communication and patient-management skills.

**Periodontics (PERI)****PERI 508. Physical Diagnosis. 2 Hours.**

Semester course; 30 lecture hours. 2 credits. Provides lectures and hands on experience in physical diagnosis, history taking, general physical examination and review of major organ systems.

**PERI 511. Anesthesiology Rotation. 1.5 Hour.**

Semester course; 45 clinical sessions. 1.5 credits. Provides students with experience in general anesthesia under the direction of the dental anesthesiologist. Emphasizes operating room procedures, airway management, intravenous technique, anesthetics and resuscitative procedures. Includes clinical management of conscious sedation cases.

**PERI 512. Conscious Sedation. 2 Hours.**

Semester course; 30 lecture/seminar hours. 2 credits. Reviews concepts of parental conscious sedation techniques to include anatomy and physiology of the respiratory, cardiovascular and central nervous system, drug pharmacology, intravenous technique, prevention, recognition and management of complications, management of emergencies, physiologic monitoring and equipment, basic life support and advanced cardiac life support.

**PERI 514. Introduction to Periodontics. 3 Hours.**

Semester course; 48 lecture/seminar hours. 3 credits. Provides students with an introduction to the clinical practice of periodontics. Emphasizes diagnosis, etiology, prognosis, treatment planning, initial therapy, therapeutic approaches, suturing techniques, oral hygiene and dental photography.

**PERI 515. Internal Medicine Rotation. 1.5 Hour.**

Semester course; 45 clinic sessions. 1.5 credits. Provides students with experience in internal medicine under the direct supervision of the Department of Internal Medicine. Emphasizes hospital procedures and management of the medically-compromised patient.

**PERI 520. Principles of Periodontics. 2 Hours.**

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken for two consecutive semesters. Reviews the principles of the basic science of periodontology, including anatomy of the periodontium, classification, etiology, diagnosis, scaling and root planning, and treatment planning. Reviews the indications and contraindications for management of complex periodontal problems. Reviews the principles of non-surgical and surgical techniques.

**PERI 525. Diagnosis of Periodontal Diseases. 1 Hour.**

The first in a four-part series of didactic courses designed to prepare the dental student for the clinical diagnosis and management of periodontal diseases. Through this course, students will develop a fundamental understanding of how to assess patients for periodontal disease and how to develop a specific diagnosis. Enrollment is restricted to admitted dental students.

**PERI 526. Etiology and Pathogenesis of Periodontal Diseases. 1.5 Hour.**

1.5 credits. The second in a four-part series of didactic courses designed to prepare the dental student for the clinical diagnosis and management of periodontal diseases. Through this course, students will build upon their knowledge of diagnosis and develop their understanding of the causes, mechanisms and development of periodontal disease. Enrollment is restricted to admitted dental students.

**PERI 552. Implantology. 1,2 Hour.**

Semester course; 16 lecture/seminar hours. 1 credit. Covers the historical review of dental implants, including biologic principles, techniques and systems; diagnosis, interdisciplinary considerations, treatment planning and indications and contraindications for implants; wound healing for implants, including osseointegration, surgical techniques and implant maintenance. Provides a hands-on technique laboratory.

**PERI 619. Clinical Pathology Rotation. 0.5 Hours.**

Semester course; 21 clinic sessions. 0.5 credit. Provides instruction in patient assessment, biopsy technique, assessment of tissue preparations and review of oral histologic slide materials.

**PERI 627. Non-Surgical Periodontal Therapy. 1.5 Hour.**

The third in a four-part series of didactic courses designed to prepare the dental student for the clinical diagnosis and management of periodontal diseases. Through this course, students will add to their skill set a conceptual knowledge of non-surgical treatment options for periodontal disease. Enrollment is restricted to admitted dental students.

**PERI 630. Medicine: Oral Medicine Seminar. 1.5 Hour.**

Semester course; 26 seminar hours. 1.5 credits May be repeated for credit. Must be taken every semester of the program. Emphasizes diagnosis, pathogenesis, oral manifestations and management of systemic diseases. Reviews the management of the medically-compromised patient, including laboratory procedures, pharmacology, hematology and reviews of the cardiovascular, respiratory, endocrine and neurologic systems. Discusses and critically evaluates medical and oral medicine topics relative to management of the periodontal patient.

**PERI 650. Periodontal Literature Review. 3 Hours.**

Semester course; 48 seminar hours. 3 credits. Must be taken every semester of the program. Reviews the periodontal literature from early classic articles to current publications pertaining to the scientific basis for periodontal procedures. Reviews the concepts of diagnosis, etiology, epidemiology, pathogenesis, therapy, maintenance of periodontal diseases and implantology. Discusses content of the literature by means of abstracts and study questions.

**PERI 654. Treatment Plan: Case Presentations. 1 Hour.**

Semester course; 12 seminar hours. 1 credit. Must be taken every semester of the program. Emphasizes the interpretation the medical and dental histories, radiographic and clinical findings, diagnosis, etiology, prognosis, treatment planning, therapy and supportive periodontal care. Discusses the content of reviewed cases by written and oral presentations. Requires the student to assimilate and interpret clinical findings.

**PERI 656. Current Literature Review. 3 Hours.**

Semester course; 36 seminar hours. 3 credits. May be repeated for credit. Must be taken every semester of the program. Provides an in-depth review of contemporary periodontal literature. Discusses content of the reviewed literature by means of abstracts and discussion.

**PERI 670. MASTERS THESIS - PERIODONTICS. 1,1.5 Hour.****PERI 680. Clinical Periodontics. 1-5 Hours.**

Semester course; 160 clinic sessions. Variable for 1-5 credits. Must be taking both fall and spring of the first, second and third years of the program for 5 credits each semester. May be taken in additional semesters as needed to complete clinical training; credit will vary based on circumstances. Provides supervised training in periodontics. Provides the student with the experience in the treatment and management of patients with various types and severities of periodontal diseases. Emphasizes diagnosis, treatment planning, prognosis, scaling and root planning, non-surgical and surgical techniques. Provides experience in the treatment of advanced periodontal cases and more complex surgical techniques including preprosthetic, orthodontic, periodontal plastic and mucogingival procedures, guided tissue regeneration, guided bone regeneration and implant surgical techniques. Graded P/F.

**PERI 700. Advanced Periodontal Selective. 1.5 Hour.**

Yearlong course; 15 seminar and 25 clinical hours. 1.5 credits. Prerequisites: successful completion of all prior courses in periodontics and permission of the course director. This course is offered to dental students who demonstrate high academic achievement and are interested in expanding their practical knowledge and experience in periodontal surgical procedures. It is designed to enhance the general dentist's knowledge regarding indications, diagnosis and treatment planning of periodontal surgical procedures and to provide hands-on experience in applying techniques of surgical periodontal procedures suitable for judicious use in general dental practice. Students receive CO grading in the fall and a pass or fail grade and earned credit in the spring.

**PERI 719. Specialty Practice Management. 0.5 Hours.**

Semester course; 22 seminar hours. 0.5 credit. Must be taken for two consecutive semesters. Provides the student with experience in office management. Requires visits to specialty offices to familiarize the student with contemporary modes of practice administration and patient management.

**PERI 733. Surgical Periodontal Therapy. 1 Hour.**

1 credit. The fourth in a four-part series of didactic courses designed to prepare the dental student for the clinical diagnosis and management of periodontal diseases. Through this course, students will complete their didactic exploration of periodontal diseases with a conceptual knowledge of surgical treatment options for periodontal diseases. Enrollment is restricted to admitted dental students.

**PERI 739. Clinical Periodontics III. 5 Hours.**

Yearlong course; clinical contact hours. 5 credits. The primary objective of the department is to provide an educational experience that will enable the dental student to meet the periodontal needs of present and future patients. These objectives necessitate student awareness of the biology of the periodontium and pathology of gingival and periodontal diseases; the ability to examine, diagnose and develop a treatment plan for the patient with significant periodontal disease; and an understanding of the implications of periodontal diagnosis and treatment on the oral and general health of the patient. The student should also be competent in plaque control, scaling, root planing and other procedures ordinarily included in presurgical phases of therapy. The student should be familiar with the entire scope of periodontal therapy, understanding the rationale and indications for surgical treatment and anticipated results.

**PERI 749. Clinical Periodontics IV. 1 Hour.**

Yearlong course; 1 clinic session per week. 1 credit. This final clinical course in periodontics provides competency assessment of the dental student as an entry-level dentist in the diagnosis and management of patients with periodontal diseases. Students receive CO grading in the fall and a pass or fail grade and earned credit in the spring.

**Prosthodontics (PROS)****PROS 560. BASIC PROSTHODONTICS. 9 Hours.****PROS 622. Preclinical Fixed Prosthodontics. 2 Hours.**

Yearlong course; 1 lecture contact hours. 2 credits. Designed for the second-year dental student to introduce basic principles of fixed prosthodontics and gain experience with the fundamental steps necessary in rendering this type of care. This includes preparing teeth to receive fixed prosthodontic restorations, making impressions, making interim restorations and selected steps in fabricating a cast restoration. This course contains both a lecture and laboratory component with the skill development depending exclusively on the laboratory experience.

**PROS 623. Preclinical Fixed Prosthodontics Laboratory. 4 Hours.**

Yearlong course; 6 laboratory contact hours. 4 credits. Designed for the second-year dental student to introduce basic principles of fixed prosthodontics and gain experience with the fundamental steps necessary in rendering this type of care. This includes preparing teeth to receive fixed prosthodontic restorations, making impressions, making interim restorations and selected steps in fabricating a cast restoration. This course contains both a lecture and laboratory component with the skill development depending exclusively on the laboratory experience.

**PROS 624. Preclinical Removable Prosthodontics. 2,4 Hours.**

Yearlong course; 2 lecture and 4 laboratory contact hours. 2 lecture and 4 laboratory credits. An introductory course in removable prosthodontics, including complete dentures and removable partial dentures. Presents the basic information, which is prerequisite for understanding the laboratory procedures and the diagnosis and treatment planning of patients requiring CDs and RPDs. The laboratory component provides hands-on skill development of these same procedures.

**PROS 626. Clinical Principles of Dental Implantology Lecture. 1 Hour.**

Semester course. 1 credit. Enrollment restricted to admitted dental students. Offered in tandem with a laboratory course and providing didactic information on the same topic, this course is a preclinical experience for predoctoral students, designed to introduce necessary clinical skills for dental implantology.

**PROS 628. Clinical Principles of Implantology Lab. 1 Hour.**

Semester course; 48 lab contact hours. 1 credit. Enrollment restricted to admitted dental students. Offered in tandem with a lecture course and providing didactic information on the same topic, this course is a preclinical laboratory experience for predoctoral students, designed to introduce necessary clinical skills for dental implantology. Simulated activities include diagnosis and treatment planning, fabrication of a surgical guide, implant surgery, implant prosthodontic impression making, master cast fabrication, implant crown provisionalization, and implant overdenture treatment skills. Students will see demonstrations of cone-beam CT scan technology, computer-based software for implant surgical treatment planning and computer-based CAD-CAM design for custom implant abutments.

**PROS 700. Senior Selective in Advanced Clinical Prosthodontics. 4 Hours.**

Semester course; 3 clinical and 1 didactic hours per week. 4 credits. Prerequisites: Successful completion of PROS 623, PROS 624, PROS 731, PROS 735, PROS 739 and permission of the course director. This class is a two-semester clinical course designed to develop advanced skills in treating prosthodontic cases beyond the level of basic clinical competency required for graduation. Graded CO in the first semester and P/F in the second.

**PROS 731. Complete Denture Prosthodontics. 1,1.5 Hour.**

Semester course; 1.5 lecture hours. 1.5 credits. Designed to present the current concepts, principles and diagnostic techniques required to diagnose, treatment plan and predict the outcome of the treatment of edentulous patients and patients requiring a single denture against natural teeth. Acceptable clinical procedures are presented for the management of patients that fall into the above categories. Correlation of basic and clinical science is emphasized, as well as the prosthodontic ramifications of the mechanical and behavioral sciences.

**PROS 735. Removable Prosthodontics Diagnosis and Treatment. 1.5 Hour.**

Semester course; 1.5 lecture contact hours. 1.5 credits. Designed to prepare students to apply their preclinical removable prosthodontic knowledge and skill in the clinical setting. Focuses on the diagnosis and treatment planning aspects of clinical care.

**PROS 739. Clinical Fixed Prosthodontics III. 2 Hours.**

Yearlong course; 2 clinical contact hours. 2 credits. This course builds on technical skills developed in PROS 622 (D2 year) and applies them to patient care in the clinical setting. Graded CO in the fall semester with a letter grade and credit awarded in spring.

**PROS 740. Clinical Removable Prosthodontics. 3.5 Hours.**

Yearlong course; 3.5 clinical contact hours. 3.5 credits. This course builds on technical skills developed in PROS 624 (D2 year) and applies them to patient care in the clinical setting. Graded CO in the fall semester with a letter grade and credit awarded in spring.

**PROS 749. Clinical Prosthodontics IV. 7 Hours.**

Yearlong course; 3-4 clinic sessions per week. 7 credits. This capstone course provides clinical experience in basic fundamental prosthodontic procedures, including diagnosis, management and treatment of patients in need of reconstructive fixed, removable or implant prosthodontic care. The course also includes both technical and competency assessment of the dental student's skills as an entry-level general dentist. Students receive CO grading in the fall and a letter grade and earned credit in the spring.

## School of Medicine

### Medicine (MEDI)

**MEDI 100. MEDICINE 100. 2.25,15 Hours.**

**MEDI 150. MEDICINE 150. 1-15 Hours.**

**MEDI 200. MEDICINE 200. 15 Hours.**

**MEDI 250. MEDICINE 250. 1-15 Hours.**

**MEDI 300. MEDICINE 300. 6,15 Hours.**

**MEDI 350. MEDICINE 350. 1-15 Hours.**

**MEDI 400. MEDICINE 400. 5-15 Hours.**

**MEDI 450. MEDICINE 450. 1-15 Hours.**

**MEDI 694. Pediatric Psychology Practicum. 1-3 Hours.**

Semester course; one-half day per credit. 1-3 credits. Available only to graduate students in clinical or counseling psychology that are approved by the instructor. A series of training experiences designed to facilitate skill development in pediatric psychology and enhance effectiveness as a pediatric psychologist working within a medical setting. Trainees are given an opportunity to apply and practice diagnostic interviews, patient education, brief consultations and diagnostic and therapeutic skills with a pediatric population. Students will learn to effectively communicate and function as part of an interdisciplinary team in an academic medical setting. Careful supervision and evaluation of the student is provided.

**MEDI 695. Independent Study in Health Psychology. 1-3 Hours.**

Semester course; 1-3 contact hours. 1-3 credits. Approval from faculty member required. Provides the opportunity for students to explore a special topic of interest in the area of health psychology under the direction of a faculty member. A proposal for a topic of study and anticipated timeline for completion must be submitted to and approved by the faculty mentor; credits will be assigned commensurate with the complexity of the project. Arrangements are made directly with the appropriate faculty member. Graded as S/U/F.

**MEDI 701. ACTING INTERNSHIP IN MEDICINE. 1-9 Hours.**

## School of Pharmacy

### Medicinal Chemistry (MEDC)

**MEDC 526. Research Techniques in Medicinal Chemistry. 1-4 Hours.**

Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in medicinal chemistry research are presented.

**MEDC 527. Basic Pharmaceutical Principles for the Practicing Pharmacist. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Examines basic science principles in organic chemistry and biological chemistry as specifically related to the pharmaceutical treatment of disease.

**MEDC 530. Bioinformatics and Genomics in Drug Research. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Covers the basic elements of cellular pathways and drug interactions, and how modern genomics comes into play. Presents bioinformatics principles being used every day in data-intensive fields of research. Introductory and concept-oriented, the course will prepare students for grasping how bioinformatics is being used in many areas of biomedical sciences. Geared toward students coming from a variety of backgrounds in biology, biochemistry and chemistry. While many of the analytical approaches are statistical in nature, there is no requirement for a background in statistics or mathematics. Each student will have the opportunity to design a small project applying bioinformatics concepts. Crosslisted as: BNFO 530.

**MEDC 532. Medicinal Chemistry for Nurse Anesthetists. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. A review of the principles of organic chemistry and bio-organic chemistry presented as a series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

**MEDC 533. Pharmacognosy. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Designed to introduce the basic concepts of pharmacognosy that apply to crude drugs and semipurified and purified natural products that are typically available in pharmacies. The regulation of herbal products and evaluation of the purity and bioavailability of alternative and complementary medicines will be discussed.

**MEDC 541. Survey of Molecular Modeling Methods. 1 Hour.**

Semester course; lecture and laboratory hour. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

**MEDC 542. Biotechnology-derived Therapeutic Agents. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Provides the fundamentals of biotechnology-derived biological agents including structure, manufacture, stability, analysis, formulation and usage. Selected examples of biological agents in current and future therapy may also be covered.

**MEDC 543. Clinical Chemistry for the Pharmacist. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. A study of the underlying principles and practical limitations of analytical procedures with emphasis on evaluation of over-the-counter analytical products currently sold or used in pharmacies and assays of organ pathophysiology used in hospitals.

**MEDC 553. Clinical Therapeutics Module: Introduction to Medicinal Chemistry. 1 Hour.**

Module course; variable lecture hours. 1 credit. Introduces topics in medicinal chemistry common to all drug classes, including structure activity relationships, principles of drug action, drug design and drug metabolism. Drugs acting on the autonomic nervous system are presented as a case study illustrating applications of the general principles.

**MEDC 555. Fundamentals of Drug Discovery I. 3.5 Hours.**

Semester course; 3.5 lecture hours. 3.5 credits. Students will work individually or in groups to learn the fundamentals of medicinal chemistry and drug discovery. The course utilizes formal lectures, informal group discussions, literature research and formal oral and/or written assignments to impart knowledge and practice of drug discovery. The course focus will be on molecular biology and pharmacological aspects of medicinal chemistry.

**MEDC 556. Fundamentals of Drug Discovery II. 3.5 Hours.**

Semester course; 3.5 lecture hours. 3.5 credits. Students will work individually or in groups to learn the fundamentals of medicinal chemistry and drug discovery. The course utilizes formal lectures, informal group discussions, literature research and formal oral and/or written assignment to impart knowledge and practice of drug discovery. The course focus will be on methodologies and techniques of medicinal chemistry.



**MEDC 591. Special Topics in Medicinal Chemistry. 3.5 Hours.**

Semester course; 1-3.5 credits. An elective course in which students may choose to participate in individual or group study in one or more areas of medicinal chemistry. The course can take the form of formal lectures, informal group discussions, literature research, and/or laboratory research. Students must have the permission of the individual instructor before registering for this course.

**MEDC 601. Advanced Medicinal Chemistry I. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course is designed to expose graduate students to the history and practice of medicinal chemistry with an emphasis on drug development, design, structure-activity relationship studies and their association with diseases to prepare students for future work in academia or industry.

**MEDC 609. Advanced Organic Synthesis: A Target-oriented Approach. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. A study of chemical transformations in organic chemistry, their mechanisms and their application to the synthesis of complex target molecules.

**MEDC 610. Advanced Medicinal Chemistry II. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MEDC 601 or permission of instructor. Introduces concepts for understanding the medicinal chemistry of the central nervous system.

**MEDC 614. Research Techniques. 1-4 Hours.**

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail. Crosslisted as: PCEU 614/PHAR 614.

**MEDC 620. Advanced Medicinal Chemistry III. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Prerequisite: MEDC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

**MEDC 630. Theoretical Methods in Drug Design. 2 Hours.**

Semester course; lecture and laboratory hours. 2 credits. Prerequisites: MEDC 601, MEDC 610 or MEDC 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

**MEDC 642. Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry. 3 Hours.**

Semester course; 1 lecture hour. 1 credit. Surveys nucleoside, nucleotide, carbohydrate and peptide chemistry with emphasis on their synthesis.

**MEDC 643. Regioselective Drug Metabolism. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

**MEDC 644. Asymmetric Synthesis. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Reviews the major asymmetric chemical transformations, including mechanisms, scope and synthetic utility.

**MEDC 645. Introduction to Heterocyclic Chemistry. 3 Hours.**

Semester course; 1 lecture hour. 1 credit. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

**MEDC 670. Advanced Molecular Modeling Theory and Practice. 3 Hours.**

Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: MEDC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

**MEDC 690. Departmental Research Seminar. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Reports presented by students, staff and visiting lecturers, current problems and developments in pharmaceutical and medicinal chemistry are discussed. Graded as PR in first semester of enrollment, with a letter grade assigned in the following semester.

**MEDC 691. Special Topics in Medicinal Chemistry. 1-4 Hours.**

Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

**MEDC 697. Directed Research in Medicinal Chemistry. 1-15 Hours.**

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

**Pharmaceutical Sciences (PSCI)****PSCI 607. Introduction to Pharmaceutical Sciences From Bench to Shelf. 1 Hour.**

Continuous courses; 2 credits offered: 1 credit hour each in fall and spring. These two courses will be run as if they were a single 2-credit course spanning two semesters. Students will be introduced to the drug discovery process, both conventional and contemporary, and learn about all the aspects of drug development from drug design to drug approval, production and marketing. Each topic will be introduced by either a faculty member or an expert from the pharmaceutical industry. Active discussion will be encouraged during each session. PSCI 607 graded as PR; PSCI 608 graded S/U/F upon completion.

**PSCI 608. Introduction to Pharmaceutical Sciences From Bench to Shelf. 1 Hour.**

Continuous courses; 2 credits offered: 1 credit hour each in fall and spring. These two courses will be run as if they were a single 2-credit course spanning two semesters. Students will be introduced to the drug discovery process, both conventional and contemporary, and learn about all the aspects of drug development from drug design to drug approval, production and marketing. Each topic will be introduced by either a faculty member or an expert from the pharmaceutical industry. Active discussion will be encouraged during each session. PSCI 607 graded as PR; PSCI 608 graded S/U/F upon completion.

**PSCI 691. Special Topics in Pharmaceutical Sciences I. 0.5-5 Hours.**

Semester course. 0.5-5 lecture hours. 0.5-5 credits. Subject matter is presented by lecture, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training. Graded S/U/F.

**PSCI 692. Special Topics in Pharmaceutical Sciences II. 0.5-5 Hours.**

Semester course; 0.5-5 lecture hours. 0.5-5 credits. Subject matter is presented by lecture, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

## Pharmaceutics (PCEU)

### PCEU 501. Pharmaceutical Calculations. 1 Hour.

Semester course; 1 lecture hour. 1 credit. This course is designed in a student-centered learning format that supports self-directed learning. The course will help students develop the skill set needed to screen out the distractors from the determinant variables in a statement problem and guide their thought processes in sequential use of information to solve calculation problems seen in pharmacy practice.

### PCEU 507. Pharmaceutics and Biopharmaceutics I. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Designed to describe the physico-chemical and biopharmaceutical principles fundamental to the development of pharmaceutical dosage forms. Topics will include pharmaceutical calculations, solid-state properties, solubility, partitioning, solution properties, disperse systems, micromeritics, diffusion, dissolution and release rates, drug and dosage form stability and degradation, pharmaceutical manufacture, and compounding.

### PCEU 508. Pharmacokinetics. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Major topics include the mathematical and physiological principles of pharmacokinetics related to the development and use of pharmaceutical dosage forms. Discussions will include compartmental modeling, physiological concepts of pharmacokinetics, and clearance and absorption concepts. Also includes material related to statistics.

### PCEU 509. Pharmaceutics and Biopharmaceutics II. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: PCEU 507. Designed to describe the biopharmaceutical principles fundamental to the development of pharmaceutical dosage forms, including parenteral products, solutions, disperse systems, semisolids, solids and novel drug delivery systems. The formulation, manufacture, control, biopharmaceutics and relevant patient-pharmacist interactions of the major dosage forms will be addressed and presented by route of administration.

### PCEU 604. Molecular Pharmaceutics. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of course coordinator. The student's basic biochemistry and pharmacy education will be expanded with emerging molecular concepts in enzyme and transporter structure and function, roles in drug disposition, pharmacogenomics, biochemistry, molecular biology, and experimental techniques.

### PCEU 612. Advanced Physical Pharmacy and Biopharmaceutics. 3-5 Hours.

Semester course; 3 credits. Phase equilibria and phase transfer kinetics related to biopharmaceutics will be covered. The relationship between physicochemical properties of a drug dosage form and drug absorption, along with the correlation between in vitro tests used to evaluate dosage forms and in vitro measures of drug absorption will be covered. The course assumes that the student has a basic understanding of pharmacokinetics, physical chemistry and statistics.

### PCEU 614. Research Techniques. 1-3 Hours.

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail. Crosslisted as: MEDC 614/PHAR 614.

### PCEU 615. Applied Pharmacokinetics. 2.5 Hours.

Semester course; 2.5 lecture hours. 2.5 credits. Extends the concepts of pharmacokinetics as applied to dosage regimen design, pharmacokinetic variability, drug interactions and statistical strategies for individualization of drug therapy. Lectures and conferences take place throughout the semester.

### PCEU 621. Advanced Pharmaceutics and Drug Disposition. 3 Hours.

Semester course; 3 lecture hours. 3 credits. Study at the advanced level of the relationships between the physicochemical properties of a drug and dosage form and the absorption, distribution, elimination and pharmacological effects of the drug. Current theory and methodology involved in solving problems at the research level are emphasized.

### PCEU 622. Clinical Pharmacokinetics. 3 Hours.

Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction. (Nontraditional program).

### PCEU 624. Advanced Pharmacokinetics. 3 Hours.

Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, and digital computers for analysis of linear and nonlinear biologic systems.

### PCEU 625. Pharmaceutical Analysis. 2 Hours.

Semester course; 1 lecture and 1 laboratory hours. 2 credits. Theory and practice of selected analytical techniques for the quantitative analysis of drugs in body fluids and other matrices. Emphasis is on method validation, and immunoassay methodologies. Laboratory sessions will provide "hands on" experience with modern methods of drug analysis.

### PCEU 626. Pharmaceutical Analysis Laboratory. 1 Hour.

1 lecture hour. 1 credit. Prerequisite: PHAR 625. A continuation of PHAR 625 with emphasis on providing advanced topics for analysis of drugs and metabolites.

### PCEU 690. Pharmaceutics Research Seminar. 1 Hour.

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmaceutics. Research Seminar.

### PCEU 691. Special Topics in Pharmaceutics. 1-5 Hours.

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the training in research.

### PCEU 697. Directed Research in Pharmaceutics. 1-15 Hours.

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

## Pharmacy (PHAR)

### PHAR 509. Evidence-Based Pharmacy I: Introduction to Pharmacy Information Skills. 1.5 Hour.

Semester course; 1.5 lecture hours. 1.5 credits. This is the first of a three-course series introducing students to information skills necessary for the practice of evidence-based pharmacy. Lecture topics include drug information resources, efficient information retrieval, assessment of drug information sources, relationship of pharmaceutical industry to drug literature, and basic laws and regulations associated with prescription processing. Class exercises will be used to promote the appropriate use of drug information resources in pharmacy practice.

**PHAR 512. Health Promotion and Disease Prevention. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Introduction to the role of the pharmacist in health promotion and disease prevention. Skills for pharmacist involvement in implementing aspects of Healthy People 2010, educating patients and addressing health care disparities will be emphasized.

**PHAR 513. Contemporary Pharmacy Practice. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Introduction to foundational concepts of pharmacy practice, professionalism, evolving roles of pharmacists in U.S. health care and forces that influence the profession through discussions, debates and panel presentations. An introduction to state laws that affect pharmacy practice and the provision of pharmacy care are provided. Students will be introduced to the management of secure, innovative pharmacy services, including the medication use system, and integrated patient care.

**PHAR 523. Foundations I. 1.5 Hour.**

Semester course; 4.5 laboratory hours. 1.5 credits. This competency-based course is intended to give the first-year pharmacy student an introduction to the pharmacy profession, emphasizing the skills and values that are necessary to be a competent, caring pharmacist. It is the first in a six-semester practice-based course sequence that introduces the language and tools of contemporary pharmacy practice with an emphasis on calculations, communication, medical terminology, drug information, prescription processing, health promotion, patient assessment and problem solving.

**PHAR 524. Foundations II. 1.5 Hour.**

Semester course; 4.5 laboratory hours. 1.5 credits. This competency-based course is the second in a six-semester practice-based course sequence with an emphasis on the preparation and dispensing of selected extemporaneous compounds including liquid, solid and semisolid preparations and the appropriate use of selected OTC point-of-care devices.

**PHAR 525. Communications in Pharmacy Practice. 2 Hours.**

Semester course; 1.5 lecture hours and an average of 1 conference hour per week. 2 credits. A study of the theory and techniques of communication and counseling techniques related to pharmacy practice. Supervised practice in developing basic communication skills.

**PHAR 526. Community Pharmacy Practice. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Helps students develop the necessary foundation for the management of activities in community pharmacy practice settings with many of the skills developed in this course being equally applicable to other practice settings. Focuses on financial management and managed care as it affects community practice.

**PHAR 529. Clinical Therapeutics Module: Introduction to Special Populations. 2 Hours.**

Module course; 2 lecture hours. 2 credits. Introduction to issues affecting the pharmacotherapy of special populations such as pediatric and geriatric patients.

**PHAR 530. Introductory Pharmacy Practice Experience: Community Practice. 4 Hours.**

Semester course; daily for 4 weeks. 4 credits. Students will meet with an assigned community pharmacist 5 days per week for 8 hours for 4 consecutive weeks at the end of the P-1 year. Students will practice pharmacy under supervision while learning about the medication use system in community pharmacy practice. Students will demonstrate core practice skills: communication, pharmacy calculations, ethics, medication safety, wellness and health promotion, informatics and critical thinking. Graded as honors, high pass, pass, fail.

**PHAR 532. Introductory Pharmacy Practice Experience: Hospital Practice. 3 Hours.**

Semester course; 40 hours per week for three weeks. 3 credits. Students will meet with an assigned hospital pharmacist for a three-week (120 hours) experience at the end of the P-2 year to practice pharmacy in a hospital environment and learn about hospital pharmacy management and medication distribution systems. Students will demonstrate core practice skills: communication, calculations, ethics, medication safety, technology, informatics and critical thinking. Graded as honors, high pass, pass, fail.

**PHAR 533. Introductory Pharmacy Practice Experience: Service-learning. 0.5 Hours.**

Semester course; .5 credits. Students will complete 20 hours of approved service-learning experiences under supervision. Reading assignments and assessments will be conducted. Students will also prepare a reflection describing the benefits to the community when pharmacists engage in the health and education needs of the community. Students will develop a sense of personal responsibility for addressing the problems and needs of society. Graded as pass/fail.

**PHAR 534. Foundations III. 1 Hour.**

Semester course; 3 laboratory hours. 1 credit. This competency-based course is the third in a six-semester practice-based course sequence with an emphasis on the clinical application of medications in the management of various disease states. The second-year pharmacy student will develop skills in the assessment and therapeutic monitoring of selected disease states and drug therapies. Topics include cardiovascular, endocrine and neurology therapeutics.

**PHAR 535. Foundations IV. 1 Hour.**

Semester course; 3 laboratory hours. 1 credit. This competency-based course is the fourth in a six-semester practice-based course sequence. Introduces students to the skills required to practice in institutional settings such as hospitals and long-term care facilities and in home health care.

**PHAR 540. Self-Care and Alternative and Complementary Treatments. 2.5 Hours.**

Module course; variable lecture and conference hours. 2.5 credits. Introduction to the concepts of self-care and alternative and complementary treatments. Students will learn to distinguish treatable signs and symptoms of common diseases and exclusions for care that require referral to appropriate health care practitioners. Non-medication methods to alleviate and prevent self-care problems are reviewed. Patient cases, self-care consultations, lectures and conferences will be used to facilitate learning.

**PHAR 541. Patient Assessment in Pharmacy Practice. 2 Hours.**

Semester course; variable lecture and laboratory hours. 2 credits. Provides students with an introduction to patient assessment skills necessary in patient-centered pharmacy practice. Course topics include basic physical assessment techniques, interpretation of findings from laboratory tests or physical examinations and documenting findings from patient assessments. Laboratory time will be used to practice various assessment skills. The course will also build on communication and information skills presented in previous courses.

**PHAR 544. Clinical Therapeutics Module: Cardiovascular. 4.5 Hours.** Module course; variable hours. 4.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with cardiovascular diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 545. The U.S. Health Care System. 2 Hours.** Semester course; 2 lecture hours. 2 credits. Open to professional students only. Designed to introduce the student to the components of the U.S. health care system and the interrelationships among health care consumers and providers. It also presents the organizational framework and regulatory and reimbursement mechanisms which are the foundations of the U.S. health care delivery system. A unique feature of this course is the interdisciplinary teaching team.

**PHAR 547. Managing Professional Patient-centered Practice. 1.5 Hour.** Semester course; 1.5 lecture hours. 1.5 credits. Introduces pharmacy students to the basic principles of managing a professional pharmacy practice. Students will learn patient-centered practices associated with effective medication use and positive patient outcomes. Instruction will be through lectures, case discussions and portfolio assignments.

**PHAR 549. Pharmacogenetics. 1 Hour.** and Pharmacogenomics Semester course; 1 lecture hour. 1 credit. Provides an introduction to pharmacogenetics and pharmacogenomics as related to pharmacy practice. The course will be taught using lectures, individual work, small-group discussions and total classroom discussion using homework, in-class assignments and patient case scenarios.

**PHAR 550. Pharmacy Practice Research. 3 Hours.** Yearlong course; 3 lecture hours. 3 credits. Focuses on the development of skills necessary for identifying issues and questions related to pharmacy practice, evaluating the literature to identify possible solutions, designing a feasible research project, developing a data analysis plan and a formal written proposal for the project. Students will ultimately present their research proposals to faculty and students. The course is graded as CO with no credit for fall semester with a letter grade and credit assigned for spring semester.

**PHAR 555. Clinical Therapeutics Module: Endocrinology. 2.5 Hours.** Module course; variable hours. 2.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with endocrine diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 556. Clinical Therapeutics Module: Neurology. 4 Hours.** Module course; variable hours. 4 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with neurological diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 565. Evidence-based Pharmacy II: Research Methods and Statistics. 2.5 Hours.** Module course; variable hours. 2.5 credits. This is the second of a three-course series introducing students to the principles and practice of evidence-based pharmacy. Lecture topics include research methods, concepts and principles of study design, and appropriate use of statistics. Class exercises promote a working understanding of statistical principles and a general understanding of research methods.

**PHAR 566. Evidence-based Pharmacy III: Drug Literature Evaluation. 2 Hours.** Module course; variable hours. 2 credits. This is the third of a three-course series introducing students to the principles and practice of evidence-based pharmacy. Lectures, outside readings, class discussions and exercises will be used to develop the skills necessary for the evaluation of biomedical literature and application to pharmacy practice.

**PHAR 602. Clinical Therapeutics Module: Psychiatry. 3 Hours.** Module course; variable hours. 3 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with psychiatric illnesses are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 603. Clinical Therapeutics Module: Respiratory/Immunology. 3 Hours.** Module course; variable hours. 3 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with respiratory and immunologic illnesses are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 604. Clinical Therapeutics Module: Infectious Diseases. 4.5 Hours.** Module course; variable hours. 4.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with infectious diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 605. Clinical Therapeutics Module: Hematology/Oncology. 2.5 Hours.** Module course; variable hours. 2.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with hematologic diseases and cancer are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 606. Clinical Therapeutics Module: Nephrology/Urology. 2 Hours.** Module course; variable hours. 2 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with kidney and urologic diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 607. Clinical Therapeutics Module: Dermatology/EENT. 2 Hours.**

and Joint Module course; variable hours. 2 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with diseases of the bone, skin, ears, eyes, nose and throat are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 614. Research Techniques. 1-4 Hours.**

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail. Crosslisted as: PCEU 614/MEDC 614.

**PHAR 618. Clinical Therapeutics Module: Gastrointestinal/Nutrition. 2.5 Hours.**

Module course; variable hours. 2.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients with gastrointestinal diseases are integrated in this course. Nutrition will be covered. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 619. Clinical Therapeutics Module: Women's Health/Bone. 2 Hours.**

Module course; variable hours. 2 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in women's health issues and patients with bone diseases are integrated in this course. The clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 620. Clinical Therapeutics Module: Critical Care/Toxicology. 2.5 Hours.**

and Complex Patients Module course; variable hours. 2.5 credits. The principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy to the application of drug therapy in patients in critical care units and in toxicology, including bioterrorism, are presented. Drug therapy use in the geriatric population will be used as a framework for complex patient care.

**PHAR 621. Pharmacoeconomics. 2 Hours.**

Module course; variable hours. 2 credits. Introduces the terms and processes of pharmaceutical economics and pharmacoeconomics. Students learn to assess the impact of economics on pharmaceutical use, evaluate pharmacoeconomic studies and make decisions on the cost effectiveness of therapeutic alternatives. Lectures, discussion and class assignments.

**PHAR 622. Epidemiology and Pharmacy Practice. 2 Hours.**

Module course; variable hours. 2 credits. Introduction to the principles of epidemiology and the relation to pharmacy practice. Emphasis on applications of epidemiologic principles in pharmacy. Lectures, outside readings, class discussions and exercises.

**PHAR 623. Patient Medication Safety. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Provides the fundamental background necessary to understand patient medication safety, including multidisciplinary responsibilities for medication safety and approaches to the management and prevention of medication errors. Current issues in medication safety and actual medication error cases will be used in the class.

**PHAR 626. Advanced Pharmacotherapy Research Methods. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of the instructor. This course focuses on research techniques used to assess the clinical response to drug therapy, including advantages and disadvantages of different techniques. Published clinical trials are evaluated to illustrate these concepts including statistical assessment. Recent FDA New Drug Applications are reviewed when appropriate to illustrate regulatory aspects of the evaluation of clinical trials.

**PHAR 631. Advanced Pharmacy Practice Management. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of professional work are explored; the management of the professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems is explored. (Nontraditional program).

**PHAR 637. Introduction to Research Methods in Pharmaceutical Sciences. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Assists practicing pharmacist managers and researchers in the development, implementation, monitoring and evaluation of programs for the delivery of pharmaceutical care and the practice of pharmacy. Introduces students to the empirical method and to provide them with a fundamental knowledge base for developing salient research questions that could lead to the articulation of testable research hypotheses, accomplished by addressing those research techniques and designs most commonly used in pharmacy and health services research.

**PHAR 638. Pharmaceutical Benefit Management. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Addresses the need for pharmacy benefit management, the types of organizations that use pharmacy benefit management and the primary tools, techniques and practices used to manage the pharmacy benefit. Presents through lectures, readings, class discussions and a research paper.

**PHAR 640. Foundations V. 1 Hour.**

Semester course; 3 laboratory hours. 1 credit. This competency-based course is the fifth in a six-semester practice-based course sequence with an emphasis on the clinical application of medications in the management of various disease states. The third-year pharmacy student will develop skills in the assessment and therapeutic monitoring of selected disease states and drug therapies. Topics include infectious disease, oncology, nephrology and urology therapeutics.

**PHAR 645. Foundations VI. 1 Hour.**

Semester course; 3 laboratory hours. 1 credit. This competency-based course is the final installment in a six-semester, practice-based course sequence. It is intended to give the third-year pharmacy student opportunities to improve acquired skills and gain additional skills necessary to provide the highest level of patient-centered care by optimizing drug therapy outcomes.

**PHAR 651. Medical Access and Care for Underserved Populations. 3 Hours.**

Semester course; lecture and experiential hours. 3 credits. Provides an overview of the issues affecting medical access for underserved populations, with an emphasis on homeless patients. Topics covered include resources, unique barriers, health literacy, interdisciplinary models in safety net organizations and medication reconciliation. Students attend lectures and complete experiential exercises to reinforce these topics, as well as creating patient education materials.

**PHAR 652. Health Promotion and Communication in Pharmacy Practice. 2.5 Hours.**

Semester course; 2.5 lecture hours. 2.5 credits. An introduction to the role of the pharmacist in health promotion and disease prevention and building communication skills to help prepare students for practice. Supervised practice in developing basic communication skills. Skills for pharmacist involvement in implementing aspects of Healthy People 2020, educating patients and addressing health care disparities will be emphasized.

**PHAR 660. Community Pharmacy Practice Management II. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Helps students develop the necessary foundation for the management of activities in community pharmacy practice settings with many of the skills developed in the course being equally applicable to other practice settings. This course focuses on developing and marketing community pharmacy services.

**PHAR 661. Institutional Pharmacy Management. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Introduces students to the practice and management of pharmacy in institutional settings -- hospitals, long-term care facilities, managed care settings and home health care. Students will learn issues unique to institutional practice and best practices for improving medication therapy in institutions. Faculty presentations, guest lectures, class exercises and outside assignments.

**PHAR 662. Leadership and Advocacy. 2 Hours.**

Semester course; 2 credits. Provides leadership and political advocacy development for students, including the officers of student organizations and those who wish to become leaders in the profession. Students will examine leadership as they explore current health care issues and gain direct experience in community action and the political advocacy process. From a broad perspective, all health care professions need effective leadership, and in turn effective political advocacy, to deal with the numerous issues facing the health care system. Many students are seeking new ways to understand and solve local and national problems, to demystify politics and to make concrete changes by having direct contact with public individuals. To meet these needs, the goals of this course are to strengthen the leadership ability of students and to enhance their potential for future leadership and advocacy roles within their profession and their communities. Graded H/P/F.

**PHAR 663. Advanced Diabetes Management. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. An in-depth study of the care of patients with metabolic syndrome and diabetes. The etiology, pathophysiology, clinical course, clinical manifestations, prevention and management of diabetes will be reviewed through the use of online didactic presentations, patient cases, self-directed learning and active participation in classroom discussion. Emphasis is placed on the use of data to optimize pharmacotherapy for patient scenarios.

**PHAR 666. Advanced Topics in Pharmacy. 1-3 Hours.**

Semester course; 1-3 lecture hours. 1-3 credits. Presentation of pharmacy subject matter by lectures, conferences or clinical site visits in selected areas of advanced study providing a discussion of topics beyond that provided in the required curriculum.

**PHAR 670. Geriatric Pharmacy Practice. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Students learn therapeutic aspects of providing health care to elderly people. Sociobehavioral aspects of aging related to pharmacotherapy outcomes also will be learned. Problems associated with drug use in the elderly and the importance of providing quality pharmaceutical care to ambulatory and institutionalized geriatric individuals will be emphasized.

**PHAR 671. Applied Pharmacoeconomics and Outcomes Research. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Presents theoretical and practical topics relating to pharmacoeconomics and health outcomes research. Students will learn to critically appraise and discuss pharmaceutical outcomes research through lectures, readings, class participation and projects. Requires students to plan, initiate and present an outcomes research project that considers both clinical and economic issues of product or service selection.

**PHAR 672. Advances in Mental Health Pharmacy Practice. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Students choose the topics for discussion in this elective course. They actively learn through small group discussions of the pharmacotherapy of psychiatric disorders. Students gain experience in patient rounds, practice-based projects, interpretation of clinical practice guidelines, use of the Internet and computer presentations.

**PHAR 673. Advanced Cardiovascular Pharmacotherapy. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHAR 544. Students will gain a broader knowledge and deeper understanding of the etiology, pathophysiology, clinical course, clinical manifestations, prevention and management of cardiovascular disorders through the use of online didactic presentations, videos, patient cases, self-directed learning and active participation in classroom discussion.

**PHAR 674. Advances in Community Pharmacy Practice and Therapeutics. 3 Hours.**

Semester course; 2 lecture and 1 conference hours. 3 credits. This course will enable students to enhance their community practice and patient care skills. It will address strategies for marketing and documentation of clinical services including disease management, wellness and screening programs pertinent to community pharmacy practice. Students will visit community pharmacies for the practice component of this course.

**PHAR 677. Infectious Diseases Pharmacotherapy. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course is designed to familiarize the student with principles of the rational treatment of human infectious diseases. Emphasis will be placed on learning the pharmacology, toxicology and pharmacokinetics/pharmacodynamics of antimicrobial agents; problems of antimicrobial resistance and the role of the pharmacist in combating resistance; the methods of obtaining and evaluating culture and susceptibility reports; and familiarity with infectious diseases literature. Students will attend daily consultation rounds with the infectious diseases service and will meet with the preceptor to discuss patients and plan for contributions to patient care.

**PHAR 678. Women's Health: Pharmacotherapeutic Issues and Controversies. 2.5 Hours.**

Semester course; 2 lecture hours. 2.5 credits. This course addresses the prevention and management of disease in women. It is designed to expand upon the women's health topics presented in the pharmacotherapy course series. Problem-based learning, student presentations and clinical projects serve as the primary teaching methods.

**PHAR 679. Critical Care Pharmacotherapy. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course consists of online recorded discussions and case presentations to familiarize the student with critical care pharmacotherapy. In addition to a discussion of various disease states, information will be provided about the critically ill patient, the environment of the intensive care unit and the role of the critical care pharmacist. The course is presented in a self-study, online format. Graded as H/P/F.

**PHAR 685. Contemporary Topics in Pharmacy. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Explores how pharmacists prepare for and respond to the issues that affect the practice of pharmacy. Contemporary issues that relate to major health care needs, government health care activities, views by health professionals, health policies, health care economics, pharmacist attitudes and behaviors, pharmacy laws and regulations, pharmacy traditional views and opinions will be examined. Discussion and debate on these issues will help to prepare students for their future in pharmacy practice.

**PHAR 686. Entrepreneurial Pharmacy and Independent Pharmacy Practice. 2 Hours.**

Semester course; 3 lecture hours/10 weeks. 2 credits. Provides a practical review of independent pharmacy practice from starting to running a pharmacy. Topics include financing, marketing, niche markets, store design and merchandising, technology, business relations, and contracts. The course will be taught through presentations/discussions by guest lecturers and a project.

**PHAR 687. Introduction to Research in Pharmacy. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. A broad overview of the types of research conducted in the profession of pharmacy with a focus on clinical research. Students will achieve a broad appreciation of the research opportunities available in pharmacy and guidance in pursuit of a career in research. Format will consist of lectures, interactive discussions and demonstrations. Graded P/R.

**PHAR 688. Applied Pharmacoepidemiology Research Methods. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisites: EPID 571 and BIOS 544 or permission of instructor. Provides an overview of the field of pharmacoepidemiology and its relationship to health care and research. Topics including selecting data sources, study design, data manipulation and analytical issues relevant to the conduct of pharmacoepidemiology research are covered. Students complete exercises to reinforce these topics, as well as prepare a formal project proposal. Research studies are also reviewed to help students develop skills in the critical evaluation of the pharmacoepidemiology literature.

**PHAR 689. Pharmaceutical Policy Analysis. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or ECON/HADM 624, or permission of instructor. Examines a breadth of pharmaceutical policy issues pertaining to stakeholders in health care including the federal government, state governments, the pharmaceutical industry, pharmacies and pharmacists, and consumers. Using an economic approach to policy analysis, various competing thoughts and challenges to health care will be presented. Special attention will be paid to theoretical foundations and scientific rigor in approaching policy analysis.

**PHAR 690. Pharmacy Research Seminar. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy. Research seminar.

**PHAR 691. Special Topics in Pharmacy. 1-5 Hours.**

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training. Graded as honors, high pass, pass, fail.

**PHAR 697. Directed Research in Pharmacy. 1-15 Hours.**

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

**PHAR 721. Clinical Therapeutics Module: Integrated Medication Management. 1 Hour.**

Module course; variable hours. 1 credit. This course integrates the principles of medicinal chemistry, pharmacology, pharmaceuticals, pathophysiology and pharmacotherapy using drug therapy in the geriatric population as a framework for application. The pathophysiology, clinical presentation, course of illness, prevention and treatment of diseases using prescription, non-prescription and complementary treatments will be reviewed.

**PHAR 724. Pharmacy Law. 2.5 Hours.**

Semester course; 2.5 lecture hours. 2.5 credits. A study of federal and state laws, including statutes, regulations and cases, affecting the practice of pharmacy and the distribution of drugs. This course includes material on ethics.

**PHAR 760. Acute Care Pharmacy Practice I. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in an acute care hospital setting. Students will actively participate in the delivery of patient care on a general medicine service. Students may participate in the following types of activities: rounding with a health care team, obtaining patient histories, identifying problems requiring therapeutic interventions, solving problems, consulting with physicians, monitoring patient outcomes and providing educational sessions for the professional staff. These services are expected to be integrated with the hospital pharmacy services. Graded as H/HP/P/F.

**PHAR 761. Advanced Hospital Pharmacy Practice. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in a hospital pharmacy department. Students will actively participate in pharmacy operations and services relating to systems for drug distribution and drug control, scope of clinical services provided by the department, management of the department, and department relationships within the institution and health system. Graded as H/HP/P/F.

**PHAR 762. Geriatrics Pharmacy Practice. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in a variety of settings with a predominately geriatric focus. These sites may include community pharmacies, specialty clinics, rehabilitation hospitals, skilled nursing facilities, home-based consult services and assisted living facilities. Students will focus on the unique medication-related needs of seniors and actively apply that special knowledge to provide quality pharmacy care to older adults. Graded as H/HP/P/F.

**PHAR 763. Ambulatory Care Pharmacy Practice. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in an ambulatory care, multidisciplinary practice setting. These sites may include hospital-based clinics, physician group practices, safety net clinics and managed care facilities that provide health care directly to patients. Students will actively participate in obtaining patient medical and medication histories, evaluating drug therapies, developing pharmacy care plans, monitoring patients' therapeutic outcomes, consulting with physicians and non-physician providers and providing education to patients and health care professionals. Graded as H/HP/P/F.

**PHAR 764. Community Pharmacy Practice. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in all facets of pharmacy practice in the community pharmacy setting. Students will be involved in dispensing, compounding, telephone consultation, patient counseling and nonprescription drug recommendations. Students also will be involved in patient assessment, monitoring intervention and follow-up care designed to improve the outcomes of drug therapy. Graded as H/HP/P/F.

**PHAR 765. Elective I. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. In this course, students will be able to participate in a variety of pharmacy practice settings. Graded as H/HP/P/F.

**PHAR 766. Elective II. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. In this course students participate in a variety of pharmacy practice settings. Graded as H/HP/P/F.

**PHAR 767. Clinical Selective I. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. Restricted to Pharm.D. dual-degree candidates. In this course students participate in a clinical rotation and may choose one of these pharmacy practice settings: ambulatory care, acute care, advanced community, institutional or geriatric. Graded as H/HP/P/F.

**PHAR 768. Advanced Community Pharmacy Practice. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in a community pharmacy setting. Students will focus primarily on patient care services and secondarily on patient-focused dispensing functions in these pharmacies. These services will focus on the identification, resolution and prevention of medication-related problems dealing with general medicine issues and medication therapy management. Students will actively participate in the following types of activities: interacting with patients, caregivers and prescribers; counseling, self-care consults and recommendations; administration of immunizations; and health and wellness screenings and information. Graded as H/HP/P/F.

**PHAR 769. Clinical Selective II. 5 Hours.**

Semester course; daily for 5 weeks (200 clinical hours). 5 credits. Restricted to Pharm.D. dual-degree candidates. In this course students participate in a clinical rotation and may choose one of these pharmacy practice settings: ambulatory care, acute care, advanced community, institutional or geriatric. Graded as H/HP/P/F.

**PHAR 771. Student Pharmacist Professionalism. 1 Hour.**

Continuing course; variable hours. 1 credit at end of four-year curriculum. Selected presentations and activities related to the development and enhancement of professional behavior in student pharmacists. Graded as CO until final semester, with pass/fail awarded on completion.

**PHAR 773. Acute Care Pharmacy Practice II. 5 Hours.**

Semester course; daily for 5 weeks. 5 credits. This course consists of 200 hours of advanced pharmacy practice experience in an acute care hospital setting. Students participate in the delivery of patient care in a general medicine or a medical specialty service. Students may participate in the following types of activities: rounding with a health care team, obtaining patient histories, identifying problems requiring therapeutic interventions, solving problems, consulting with physicians, monitoring patient outcomes and providing educational sessions for the professional staff. These services are expected to be integrated with the hospital pharmacy services. Graded as H/HP/P/F.

## Center for Interprofessional Education and Collaborative Care

### Interprofessional Education and Collaborative Care (IPEC)

**IPEC 501. Foundations of Interprofessional Practice. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Open to students enrolled in a professional health science degree program. An introductory study of the concept of interprofessional collaborative practice, this course includes units on health care systems, teams and teamwork, and professional roles and responsibilities. Students actively work within interprofessional student teams to apply course content during specific learning activities that build a foundation of the knowledge, skills and attitudes necessary for effective interprofessional practice in contemporary health care.

**IPEC 502. Interprofessional Quality Improvement and Patient Safety. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Prerequisite: IPEC 501. Course restricted to students enrolled in the schools of Medicine, Nursing and Pharmacy. A study of interprofessional quality improvement and patient safety, this course includes units on quality in the workplace, error in the health care system and improving health care. Students actively work within interprofessional student teams to apply course content to specific learning activities for interprofessional quality improvement and patient safety practice.

**IPEC 510. Interprofessional Communication and the Care Coordinator. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Enrollment requires acceptance into the Care Coordination Certificate program. Defines the various roles of the care coordinator. Identifies all health care providers on the interprofessional team and what their responsibilities are to patient and family care. Focuses on development of effective interprofessional communication and leadership strategies by introducing concepts of teamwork. Explores strategies for conflict negotiation and patient engagement. Facilitates the sharing of individual perspectives and patient care experiences.

**IPEC 511. U.S. Health Care and Care Coordination. 2 Hours.**

Semester course; 2 lecture hours, delivered online. 2 credits. Enrollment requires acceptance into the Care Coordination Certificate program. Explores the overall infrastructure of the health care system and care delivery models. Introduces concepts of regulation. Examines how the effect of different settings and levels of care impact care transitions. Explores effective use of the electronic health record. Identifies the patient-centered care model as integral to improving outcomes. Describes the best ways to share information across health care settings during care transitions.



**IPEC 512. Health Care Payment Models and Care Coordination. 3 Hours.** Semester course; 3 lecture hours, delivered online. 3 credits. Prerequisite: IPEC 511. Examines aspects of health care financing that affect the type of services the care coordinator can provide. Provides an overview of key points related to insurance coverage, including managed care, Medicare and Medicaid. Reinforces the utilization review process and compliance. Discusses an overview of current U.S. health policy with a special focus on vulnerable patients and the importance of population health management.

**IPEC 513. Ethical and Legal Considerations in Care Coordination. 2 Hours.**

Semester course; 2 lecture hours, delivered online. 2 credits. Prerequisite: IPEC 512; corequisite: IPEC 515. Focuses on applying ethical decision-making frameworks to analyze ethical dilemmas that occur with patient care and between members of the interprofessional team. Examines care coordinator role conflict between patient advocacy versus health system advocacy. Provides a framework for identifying potential liabilities while working in the care coordinator role. Examines issues surrounding access to care and social justice. Explores legal responsibilities of the care coordinator.

**IPEC 514. Hospital-based Care Coordination. 3 Hours.**

Semester course; 3 lecture hours, delivered online. 3 credits. Prerequisite: IPEC 513. Explores care coordination in the hospital setting with a focus on discharge planning, medication reconciliation and effective care transitions out of the hospital. Addresses how to identify those patients who have high risk for excess utilization of hospital resources due to limited financial means, lack of insurance, chronic illness, and/or catastrophic injury. Addresses national recommendations for effective care coordination strategies to improve patient outcomes.

**IPEC 515. Interprofessional Communication and the Care Coordinator II. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Prerequisite: IPEC 510. Reinforces roles and responsibilities of health care providers on the interprofessional team during care coordination and prepares students to assume a professional role. Applies effective interprofessional communication and leadership strategies by reinforcing concepts of teamwork. Explores strategies for conflict negotiation and patient engagement. Facilitates the sharing of individual perspectives and patient care experiences.

**IPEC 516. Community-based Care Coordination. 3 Hours.**

Semester course; 3 lecture hours, delivered online. 3 credits. Prerequisites: IPEC 514 and IPEC 515. Emphasizes the value of maintaining a primary care provider and connecting the patient with appropriate community resources. Emphasis will be on the patient-centered medical home model of health care delivery, which provides an environment conducive to direct coordination of a patient's primary care with a special focus on effective care transitions. Discusses concepts of advanced care planning, medication management and patient engagement from the outpatient perspective. Identifies how to differentiate high-risk patient populations and provide effective transitions of care within community settings. Introduces concepts of population health and the role of the family in care of the patient.

**IPEC 525. Mindfulness Practices for Health Care Professionals: Clinical Applications. 1 Hour.**

Semester course; 16 hours (lecture/seminar). 1 credit. Open to health care professional students in good standing (e.g. students in the schools of Dentistry, Nursing, Medicine, Pharmacy, Allied Health Professions or Social Work or in the programs of dental hygiene or clinical psychology). This course will allow a qualified health care professional student the opportunity to participate in a variety of mindfulness practices and learn their applications to clinical practice.

## Graduate Medical Education (GMED)

**GMED 600. Research for Residents and Fellows. 2 Hours.**

Semester course; 2 contact hours. 2 credits. Prerequisites: second year of medical training or beyond, plus approval of residency/fellowship program director. Course restricted to physician trainees (M.D., M.B.B.S., D.O.). This course is designed to be an introduction to research for medical residents and fellows. Teamwork activities will focus on the application of concepts so that participants get "hands on" experience with topics discussed in class: formulating a research question, selecting a study design, choosing appropriate biostatistical analyses, designing a survey, writing an IRB proposal and understanding the responsible conduct of research and protection of human subjects. The class will culminate in a required final assignment in the form of a capstone project.

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