

# **COLLEGE OF MEDICINE BULLETIN**

## **2022-23**

This document contains a copy of the 2022-23 Penn State College of Medicine Bulletin as it appeared on May 9, 2022.

To view a current list of changes to the 2022-23 College of Medicine Bulletin since that date, please visit the [Changes to the College of Medicine Bulletin page](#).

# TABLE OF CONTENTS

College of Medicine Bulletin .....	2	Medical Home Curriculum (MHC) .....	48
Archive .....	2	Medical Triage and Resuscitation (MEDTR) .....	48
General Information .....	2	Medicine - MD (MED) .....	48
Using this Bulletin .....	2	Musculoskeletal Medicine - MD (MSC) .....	51
About the College of Medicine .....	3	Musculoskeletal System (MSK) .....	51
Resources .....	4	Neural and Behavioral Science (NBS) .....	51
Residencies and Fellowships .....	5	Neuroscience - MD (NEURO) .....	51
Graduation Information .....	5	Neurosurgery (NSURG) .....	52
Student Handbooks .....	5	Obstetrics and Gynecology - MD (OBGYN) .....	52
About Penn State .....	6	Ophthalmology (OPHTH) .....	53
MD Program .....	9	Orthopaedics (ORTHO) .....	54
Physician Assistant Program .....	24	Pathology - MD (PATH) .....	54
University Course Descriptions .....	30	Patients and Sciences (PS) .....	55
College of Medicine Courses .....	34	Pediatrics - MD (PED) .....	56
Anatomy - MD (ANAT) .....	35	Physical Medicine and Rehabilitation (PMR) .....	58
Anesthesiology - MD (ANSTH) .....	35	Physician Assistant Studies (PAS) .....	58
Behavioral Influences Health (BIH) .....	36	Primary Care Medicine (PCMED) .....	75
Biological Basis of Disease (BBD) .....	36	Problem-Based Learning Facilitation - MD (PBL) .....	76
Cardiology - MD (CAR) .....	36	Psychiatry - MD (PSCHT) .....	77
Career Exploration and Synthesis (CES) .....	36	Pulmonary Medicine - MD (PLM) .....	77
Cellular and Molecular Basis of Medical Practice (CMBMP) .....	37	Radiology (RAD) .....	78
Clinical Learning Competencies (CLC) .....	37	Renal Medicine - MD (REN) .....	79
Complementary Alternative Medicine (CAM) .....	38	Reproductive Medicine - MD (REP) .....	79
Culinary Medicine (CULMD) .....	38	Respiratory Medicine (RESP) .....	79
Dermatology - MD (DERM) .....	38	Sciences Health Systems (SHS) .....	79
Emergency Medicine - MD (EMED) .....	38	Scientific Principles of Medicine (SPM) .....	80
Endocrinology - MD (END) .....	39	Social Influences on Health (SIH) .....	80
Endocrinology and Reproductive Medicine (ENREP) .....	39	Socio-Ecological Medicine (SOEM) .....	80
Evidence-Based Medicine I (EBM) .....	39	Structural Basis of Medical Practice (SBMP) .....	80
Family and Community Medicine - MD (FCMED) .....	39	Students as Educators (SAE) .....	80
Form and Function (FORM) .....	41	Surgery - MD (SURG) .....	81
Foundations of Clinical Medicine (FCM) .....	41	Transition (TRANS) .....	82
Foundations of Patient Centered Care (FPCC) .....	42	Transition Clinical Medicine (TCM) .....	83
Gastroenterology - MD (GI) .....	42	Translating Health Systems Science (THS) .....	83
Global Health (GH) .....	43	Underserved Medicine and Domestic Health (UMDH) .....	83
Hematology - MD (HEM) .....	43	Index .....	84
Humanities - MD (HMN) .....	43		
Integrated Science (INTSC) .....	47		
Medical Clerkship Island - MD (MCLKS) .....	48		
Medical Ethics Professionalism (MEP) .....	48		

# COLLEGE OF MEDICINE BULLETIN

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This is the official College of Medicine Bulletin of The Pennsylvania State University.

The College of Medicine dean is responsible for, and has authority over, all academic information contained in the College of Medicine Bulletin.

Each step of the educational process, from admission through graduation, requires continual review and approval by University officials. The University, therefore, reserves the right to change the requirements and regulations contained in this Bulletin and to determine whether a student has satisfactorily met its requirements for admission or graduation, and to reject any applicant for any reason the University determines to be material to the applicant's qualifications to pursue higher education.

## Archive

In 2018, Penn State began publishing an online College of Medicine Bulletin. A new edition of the College of Medicine Bulletin is published at the beginning of the summer semester each year. At that time, the College of Medicine Bulletin edition from the previous academic year is archived. You can visit this page to access past editions of the College of Medicine Bulletin.

## Past Bulletins

- 2021-22 College of Medicine Bulletin (<https://bulletins.psu.edu/archive/2021-2022/medicine/>)
- 2020-21 College of Medicine Bulletin (<https://bulletins.psu.edu/archive/2020-2021/medicine/>)
- 2019-20 College of Medicine Bulletin (<https://bulletins.psu.edu/archive/2019-2020/medicine/>)
- 2018-19 College of Medicine Bulletin (<https://bulletins.psu.edu/archive/2018-19/medicine/>)

## General Information

The seven General Information sections in the College of Medicine Bulletin are designed to give you an overview of the College of Medicine's structure, resources, and opportunities. In addition to the information found on the MD Program (p. 9) and Physician Assistant Program (p. 24) pages in this Bulletin, the student handbooks include additional details about academic policies, calendars, and contacts.

Click on topics of interest below or the tabs to the right to explore different information areas. In addition, General Information sections can be accessed from any page in the Bulletin from the navigation bar.

- Using this Bulletin (p. 2)
- About the College of Medicine (p. 3)
- Graduation Information (p. 5)
- Residencies and Fellowships (p. 5)
- Resources (p. 4)
- Student Handbooks (p. 5)
- About Penn State (p. 6)

## Using this Bulletin

This Bulletin is the comprehensive source of academic information and program requirements for the Penn State College of Medicine. The College is committed to the education of medical, physician assistant, graduate students, and practicing health professionals. Explore programs and research opportunities as you select your specialty and gain knowledge in the field.

### Features

#### Changes Page

- Real-time amendments to information in the Bulletin will be tracked on the Changes (p. 2) page.
- Currently or previously enrolled students should consult their adviser and degree audit reports for specific requirements.

#### Course Bubble

When a course link is clicked, a course bubble will appear with important course information including, but not limited to:

- course title, description, and credits;
- prerequisites

### Nondiscrimination Statement

The University is committed to equal access to programs, facilities, admission and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University's educational mission, and will not be tolerated. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Office, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901, Email: [aao@psu.edu](mailto:aao@psu.edu), Tel (814) 863-0471.

## Academic Authority

The College of Medicine dean is responsible for, and has authority over, all academic information contained in the College of Medicine Bulletin.

Each step of the educational process, from admission through graduation, requires continual review and approval by University officials. The University, therefore, reserves the right to change the requirements and regulations contained in this Bulletin and to determine whether a student has satisfactorily met its requirements for admission or graduation, and to reject any applicant for any reason the University determines to be material to the applicant's qualifications to pursue higher education.

## Changes to the College of Medicine Bulletin

Changes to the College of Medicine Bulletin will be tracked in real-time and listed below. At the end of every semester, these updates will be incorporated into the Bulletin.

## About the College of Medicine

Penn State College of Medicine is committed to enhancing the quality of life through improved health, the professional preparation of those who will serve the health needs of others, and the discovery of knowledge that will benefit all. We're dedicated to demonstrating our core values: respect, integrity, teamwork and excellence.

Penn State College of Medicine is part of an academic medical center group that also includes:

- Penn State Health Milton S. Hershey Medical Center (<http://hmc.pennstatehealth.org>), the flagship hospital, a 551-bed, tertiary-care facility that serves central Pennsylvania;
- Penn State Children's Hospital (<http://childrens.pennstatehealth.org>), the only Level I pediatric trauma center between Philadelphia and Pittsburgh; and
- Penn State Medical Group (<http://hmc.pennstatehealth.org/medical-group/>), the academic physician practice and associated outpatient practice sites of our group.

We prepare students to become patient-centric physicians and physician assistants. The MD Program provides unique learning opportunities, such as the patient navigator program and a longitudinal humanities curriculum. The Physician Assistant Program emphasizes critical thinking skills, compassionate care, and improving health in an efficient and cost-conscious manner.

## Mission and Values

### Our Mission

Penn State Health Milton S. Hershey Medical Center, Penn State College of Medicine, and Penn State Children's Hospital are committed to enhancing the quality of life through improved health, the professional preparation of those who will serve the health needs of others, and the discovery of knowledge that will benefit all.

### Education

We are committed to the education (<https://med.psu.edu/education-admissions/>) of medical and nursing students, basic science graduate students, medical residents and fellows, other students in healthcare related professions, and practicing health professionals. We seek to enroll students of exceptional quality, and their education will be based on the present and future health needs of the Commonwealth of Pennsylvania and the nation. Special recognition is given to the education of primary care providers.

### Patient Care

Our objective is to provide a range of fully integrated patient care services (<http://www.pennstatehealth.org>) for the people of central Pennsylvania and beyond. These services will extend from prevention of illness and maintenance of health through primary medical care to the highly sophisticated patient care expected at the nation's premier academic medical centers.

### Research

We strive to be a national leader in pursuing scientific investigation (<https://med.psu.edu/research/>) and developing programs to advance medical and scientific knowledge, which will ultimately contribute to the health of the public, the practice of medicine, and the education of health professionals.

### Community Outreach

We will provide community outreach services (<https://med.psu.edu/community/>) to the public through health education, patient care, community activities, and applications of research. We endeavor to provide health education to the public. In turn, community support for our research missions fosters clinical applications that positively impact patient care.

## Our Values

### Respect

- Listen, hear, and give credit
- Embrace our diverse backgrounds, talents, and perspectives
- Be compassionate, thoughtful, considerate, and kind

### Integrity

- Be the best you can be, every time
- Have moral courage to ask hard questions of ourselves and others
- Be consistent and fair

### Teamwork

- Commit to working together to ensure the best experience for co-workers, patients, and trainees
- Share knowledge for the benefit of the team
- Earn the trust of your teammates

### Excellence

- Align personal performance with our mission, vision, values, and strategic imperatives
- Set personal goals and exceed expectations
- Always be solution-focused

## History

### The "\$50 Million Phone Call"

In 1963, the M.S. Hershey Foundation offered \$50 million to The Pennsylvania State University to establish a medical school in Hershey. With this grant and \$21.3 million from the U.S. Public Health Service, the university built a medical school, research center, and teaching hospital – what is now the Penn State Health Milton S. Hershey Medical Center.

The university broke ground in 1966, and Penn State College of Medicine opened its doors to students in 1967. The Medical Center accepted its first patients in 1970.

### Leading the Way in Humanities and Family Medicine

The College of Medicine was the **first in the nation** to have a dedicated Department of Humanities and a Department of Family and Community Medicine. Both were original departments, created when the college opened.

The original buildings on the Medical Center campus included the Medical Science Building and University Hospital, Animal Research Farm, Laundry and Steam Plant, and University Manor Apartments. Since 1970, the campus has grown from 318 acres to 550 acres.

Many additions have been made to the academic and patient care facilities, reflecting the steady increase in patient demand for services and the need to expand research and teaching programs.

## Training Tomorrow's Leaders in Medicine

Since the first graduation in 1969, College of Medicine students have become productive physicians and scientists.

Today, we offer degree programs (<https://med.psu.edu/education/>) in:

- Anatomy
- Biochemistry and Molecular Biology
- Bioengineering
- Cellular and Molecular Biology
- Genetics
- Homeland Security
- Immunology and Infectious Diseases
- Integrative Biosciences
- Laboratory Animal Medicine
- Microbiology and Immunology
- Molecular Medicine
- Molecular Toxicology
- Neuroscience
- Pharmacology
- Physiology
- Public Health Sciences

Nursing students from the Penn State College of Nursing (<http://nursing.psu.edu/>) rotate through the Medical Center for clinical courses, and students from other Penn State health-related programs and other institutions come to Hershey for their clinical experience. The extended B.S. degree program for nurses is offered in conjunction with the College of Nursing.

Continuing education programs serve Medical Center and other healthcare professionals throughout Pennsylvania, with enrollment exceeding 39,000 each year.

Basic and clinical research projects to treat and cure major diseases are conducted at the College and Medical Center. Annually, this research is supported by more than \$100 million in awards from federal, state, and private agencies; businesses; and individuals.

The Medical Center is recognized as one of the nation's premier academic health centers, recruiting faculty members who are internationally known for their accomplishments in research, education, and patient care. College of Medicine and Medical Center faculty and physicians continue to integrate the latest biomedical knowledge and technology with compassionate care of patients, while educating the next generation of scientists and physicians.

## Location

### Penn State College of Medicine

700 HMC Crescent Road  
Hershey, PA 17033  
USA

Use the "Directions" button on the map below to get specific driving directions to campus. Upon arrival on campus, follow the signs to the parking garage. A complimentary shuttle is available from the second floor of the garage; ride that to the College of Medicine entrance.

Other maps:

- Google map of all campus locations ([https://drive.google.com/open/?id=1CnHnJ8LW\\_qHH9VPF2XybEhkndEo](https://drive.google.com/open/?id=1CnHnJ8LW_qHH9VPF2XybEhkndEo))
- Printable map of all campus locations (PDF) (<http://hmc.pennstatehealth.org/documents/11396232/11493882/Campus+Map/edede814-ad12-4481-a119-97793dedc8de/>)

## Resources

### Career Development

MORE INFORMATION ABOUT CAREER ADVISING FOR THE MD PROGRAM (<https://students.med.psu.edu/md-students/career-advising/>)

### Cognitive Skills Program

Penn State College of Medicine's Cognitive Skills Program (CSP) provides comprehensive cognitive skills development and learning support to our medical, graduate, and physician assistant students.

The CSP offers workshops, interactive learning sessions, and individual support for exploring content, processes, and thinking skills to maximize our students' success. The CSP serves all students in the College of Medicine by providing programs to help promote effective and efficient life-long learning. The CSP also provides remediation services for students who are struggling academically.

MORE INFORMATION ABOUT THE COGNITIVE SKILLS PROGRAM (<https://students.med.psu.edu/academics/cognitive-skills-program/>)

### Disability Services

The College of Medicine Disability Services work with graduate and medical students with documented disabilities. In order to provide students with disabilities every educational opportunity, disability services will make reasonable accommodations in accordance with Section 504 Rehabilitation Act and the Americans with Disabilities Act to ensure full academic involvement while attending Penn State College of Medicine.

MORE INFORMATION ABOUT DISABILITY SERVICES (<https://students.med.psu.edu/academics/student-disability-services/>)

### Harrell Health Sciences Library

All faculty, staff, and students at the Penn State College of Medicine and Penn State Health Milton S. Hershey Medical Center (including medical, graduate, physician assistant, and nursing students) have free unlimited access to the Harrell Health Sciences Library: Research and Learning Commons resources. Library collections and services support the informational needs of PSHMC users engaged in patient care, research, and education, including interlibrary loan, search services, and instruction.

The Library is part of Penn State University Libraries, ranked 9th on the Association of Research Libraries' Investment Index of North American research libraries. Penn State College of Medicine and Penn State Health Milton S. Hershey Medical Center members have access to more than 6.9 million books, almost 400,000 E-books, 110,000 online full-text journals and 706 databases. (2014/2015 data) The Libraries are increasingly electronic, allowing 24 hour access from anywhere.

The Library hosts 21 public computer workstations, a 24 hour computer lab, a 24 hour study room and several small group study rooms. Printers, scanners and copiers are available for use.

MORE INFORMATION ABOUT THE HARRELL HEALTH SCIENCES LIBRARY (<https://hershey.libraries.psu.edu/>)

## Office for Diversity, Equity and Inclusion

Penn State Health and Penn State College of Medicine address diversity and inclusion from a measurable, strategic perspective that includes, as a foundation, equal employment regulatory compliance.

Our commitment is communicated in the University's diversity statement (<http://equity.psu.edu/diversity-statement/>), which provides the foundation for our initiatives, as well as in our campus' mission and vision statements on diversity, equity and inclusion (<http://med.psu.edu/diversity/mission/>).

**Our goal is to be “best in class” in increasing the diversity of our students and workforce**, advancing our commitment to a respectful and inclusive workforce, providing culturally excellent care for our patients and education to our students, and making discoveries that create a greater well-being for all populations, regardless of background.

MORE INFORMATION ABOUT THE OFFICE FOR DIVERSITY, EQUITY AND INCLUSION (<http://med.psu.edu/diversity/>)

## Office for a Respectful Learning Environment

Our mission is to foster an educational community at Penn State College of Medicine in which all learners and educators feel supported, challenged, valued, and respected. This is a community endeavor; everyone can help, and anyone can hurt. We want every student to have a positive experience at the College of Medicine. Mistreatment arises when behavior shows disrespect for the dignity of others and interferes with the learning process.

The LCME mandates “that the learning environment of its educational programs is conducive to the ongoing development of explicit and appropriate professional behaviors in its [learners], faculty, and staff at all locations and is one in which all individuals are treated with respect” (LCME Functions and Structure of a Medical School). Our goal is to exceed that mandate.

MORE INFORMATION ABOUT THE OFFICE FOR A RESPECTFUL LEARNING ENVIRONMENT (<https://students.med.psu.edu/academics/respectful-learning-environment/>)

## Simulation Center

The mission of the Clinical Simulation Center is to improve patient outcomes with effective programs that promote and enhance practitioner skills, clinical competence, teamwork, and interdisciplinary collaboration.

To advance the field of healthcare simulation, the Center conducts innovative research into simulation theory, practice, and technology.

The Clinical Simulation Center maintains an active research program in simulation-based education and has more than 9,500 square feet of dedicated simulation space with state-of-the-art simulators.

MORE INFORMATION ABOUT THE SIMULATION CENTER (<http://med.psu.edu/simulation-center/>)

## Student Health

Healthcare is provided to all medical, graduate, physician assistant and nursing students in the College of Medicine and their spouses and children. Student Health is a division of the Department of Family and Community Medicine at Milton S. Hershey Medical Center, Penn State College of Medicine.

Student Health provides comprehensive primary-care services. These include acute and chronic care for medical problems, preventive healthcare including gynecology, family planning services and well-child visits. Referrals to specialists are provided as necessary by the Student Health providers.

MORE INFORMATION ABOUT STUDENT HEALTH (<https://students.med.psu.edu/student-life/student-health/>)

## Student Mental Health and Counseling

The Office of Student Mental Health and Counseling (OSMHC) is designed to meet the needs of Penn State College of Medicine students with compassion, honesty, and confidentiality. All issues are taken seriously – no problem is “too small” to talk about.

The years of graduate school and medical training can be among of the most exciting and gratifying of a person's life. However, being a student can also cause significant amounts of stress and uncertainty. During these times, students may find it helpful to have additional support and encouragement. The OSMHC is available to provide assistance and guidance students need to achieve personal and academic success.

MORE INFORMATION ABOUT STUDENT MENTAL HEALTH AND COUNSELING (<https://students.med.psu.edu/student-life/counseling/>)

## Residencies and Fellowships

Penn State College of Medicine and Penn State Health Milton S. Hershey Medical Center are committed to establishing and maintaining high-quality graduate medical education training programs.

Our institution provides the diverse patient population, dedicated faculty, excellent clinical and basic science departments, and nationally recognized research programs required to create an environment optimal for learning and for the development of future leaders in the art and science of medicine.

We offer residency and fellowship training in more than 60 ACGME-accredited (<http://www.acgme.org/>) specialties and subspecialties, and numerous other specialized training programs are available.

MORE INFORMATION ABOUT RESIDENCIES AND FELLOWSHIPS (<https://residency.med.psu.edu/>)

## Graduation Information

Information about graduation is available on the College of Medicine website (<https://students.med.psu.edu/graduation-information/>).

## Student Handbooks

READ THE MD STUDENT HANDBOOK (<https://students.med.psu.edu/md-students/handbook/>)

READ THE PHYSICIAN ASSISTANT STUDENT HANDBOOK (<https://students.med.psu.edu/physician-assistant-student-information/handbook/>)

## About Penn State

### This is Penn State

Penn State is in the top 1 percent of universities worldwide and has the largest alumni network in the nation. Founded in 1855, the University combines academic rigor with a vibrant campus life as it carries out its mission of teaching, research, and service with pride and focuses on the future throughout Pennsylvania and the world. Granted the highest rating for research universities by the Carnegie Foundation, Penn State teaches students to be leaders with a global perspective.

Our leadership in administration, faculty, and staff make our mission come alive every day. The Board of Trustees reviews and approves the budget of the University and guides general goals, policies, and procedures from a big-picture perspective. The President's office ensures that all aspects of the University are running smoothly and promotes overall principles that students, faculty, and staff abide by for the long term. The University Faculty Senate represents the Penn State faculty with legislative authority on all matters regarding the University's educational interests.

Penn State strives to celebrate diversity in all aspects of its educational and operational activities and the University's strategic plans are designed to result in ongoing improvements that help prepare future generations of leaders.

### Board of Trustees

The Board of Trustees of The Pennsylvania State University is the corporate body established by the charter with complete responsibility for the government and welfare of the University and all the interests pertaining thereto including students, faculty, staff, and alumni.

In the exercise of this responsibility, the Board is guided by the following policies:

1. The authority for day-to-day management and control of the University, and the establishment of policies and procedures for the educational program and other operations of the University, shall be delegated to the President, and by him/her, either by delegation to or consultation with the faculty and the student body in accordance with a general directive of the Board.

This delegation of authority requires that the Board rely on the judgment and decisions of those who operate under its authority. However, this reliance of the Board must be based upon its continuing awareness of the operations of the University. Therefore, the Board shall receive and consider thorough and forthright reports on the affairs of the University by the President or those designated by the President. It has a continuing obligation to require information or answers on any University matter with which it is concerned.

Finally, upon request, the Board shall advise the President on any University matter of concern to him/her.

2. The Board of Trustees shall carry out certain responsibilities as a Board, without delegation. These responsibilities are:

- a. The selection of the President of the University
  - b. The determination of the major goals of the University and the approval of the policies and procedures for implementation of such goals.
  - c. The review and approval of the operating and capital budget of the University.
  - d. Such other responsibilities as law, governmental directives, or custom require the Board to act upon.
3. The Board of Trustees shall inform the citizens of the Commonwealth of Pennsylvania of the University's performance of its role in the education of the youth of Pennsylvania.
  4. The Board of Trustees shall assist the President in the development of effective relationships between the University and the various agencies of the Commonwealth of Pennsylvania and the United States of America which provide to the University assistance and direction.

MORE INFORMATION ABOUT THE BOARD OF TRUSTEES (<https://trustees.psu.edu/>)

### President's Council

- Neeli Bendapudi, President (<https://president.psu.edu>)
- Nicholas P. Jones, Executive Vice President and Provost (<https://provost.psu.edu/>)
- Kelly M. Austin, Vice President for Commonwealth Campuses and Executive Chancellor (<https://www.campuses.psu.edu>)
- Anne (Sandy) Barbour, Vice President for Intercollegiate Athletics (<https://www.gopsusports.com>)
- Kathleen Bieschke, Vice Provost for Faculty Affairs (<https://www.vpfa.psu.edu/>)
- O. Richard Bundy III, Vice President for Development (<https://raise.psu.edu/>) and Alumni Relations (<https://www.alumni.psu.edu/s/1218/16/interior.aspx?gid=4&pgid=3346>)
- Michael J. Büsges, Interim Vice President for Information Technology/Chief Information Officer (<https://it.psu.edu/>)
- Stephen S. Dunham, Vice President and General Counsel (<https://ogc.psu.edu>)
- Yvonne Gaudelius, Vice President and Dean for Undergraduate Education (<https://undergrad.psu.edu/>)
- Frank T. Guadagnino, Vice President for Administration (<https://vpadmin.psu.edu/>); Associate General Counsel (<https://www.ogc.psu.edu/>); Secretary, Board of Trustees (<https://trustees.psu.edu/>)
- Shannon S. Harvey, Director and Associate Secretary, Board of Trustees (<https://trustees.psu.edu/>)
- Tracey D. Huston, Vice President for Outreach (<https://www.outreach.psu.edu>)
- Lawrence H. Lokman, Vice President for Strategic Communications (<https://strategiccommunications.psu.edu/>)
- Stephen M. Massini, Chief Executive Officer, Penn State Health (<https://www.pennstatehealth.org/locations/milton-s-hershey-medical-center/>)
- Zachery P. Moore, Vice President for Government and Community Relations (<https://www.govt.psu.edu>)
- Damon Sims, Vice President for Student Affairs (<https://studentaffairs.psu.edu>)

- William Sitzabee, Vice President for Facilities Management and Planning (<https://www.opp.psu.edu/>)
- Michael Wade Smith, Senior Vice President and Chief of Staff
- Allan G. Sonstebly, Executive Director of the Applied Research Laboratory (<https://arl.psu.edu/>)
- Sara Thorndike, Senior Vice President for Finance and Business/Treasurer (<https://fandb.psu.edu>)
- Lora G. Weiss, Senior Vice President for Research (<https://www.research.psu.edu>)
- Marcus A. Whitehurst, Vice Provost for Educational Equity (<https://equity.psu.edu>)
- Jennifer R. Wilkes, Interim Vice President for Human Resources (<https://hr.psu.edu/>) and Chief Human Resources Officer

MORE INFORMATION ABOUT UNIVERSITY LEADERSHIP (<https://www.psu.edu/this-is-penn-state/leadership/>)

## Mission

The Pennsylvania State University is a multi-campus, land-grant, public research University that educates students from around the world, and supports individuals and communities through integrated programs of teaching, research, and service.

Our instructional mission includes undergraduate, graduate, professional, continuing, and extension education, offered through both resident instruction and distance learning. Our educational programs are enriched by the talent, knowledge, diversity, creativity, and teaching and research acumen of our faculty, students, and staff.

Our discovery-oriented, collaborative, and interdisciplinary research and scholarship promote human and economic development, global understanding, and advancement in professional practice through the expansion of knowledge and its applications in the natural and applied sciences, social and behavioral sciences, engineering, technology, arts and humanities, and myriad professions.

As Pennsylvania's land-grant university, we provide unparalleled access to education and public service to support the citizens of the Commonwealth and beyond. We engage in collaborative activities with private sector, educational, and governmental partners worldwide to generate, integrate, apply, and disseminate knowledge that is valuable to society.

## History

As Pennsylvania's only land-grant university, Penn State has a broad mission of teaching, research, and public service. But that mission was not so grandly conceived in 1855, when the Commonwealth chartered it as one of the nation's first colleges of agricultural science, with a goal to apply scientific principles to farming.

Centre County became the site of the new college in response to a gift of 200 acres from gentleman farmer and ironmaster James Irvin of Bellefonte. Founding President Evan Pugh drew on the scientific education he had received in Europe to plan a curriculum that combined theoretical studies with practical applications.

Pugh and similar visionaries in other states championed Congressional passage of the Morrill Land-Grant Act in 1862. The act enabled states to sell federal land, invest the proceeds, and use the income to support colleges "where the leading object shall be, without excluding scientific and classical studies ... to teach agriculture and the mechanic arts

[engineering] ... in order to promote the liberal and practical education of the industrial classes in all the pursuits and professions of life." The state legislature designated Penn State the land-grant institution of Pennsylvania.

But not until the 1880s, under the leadership of President George W. Atherton, did the college expand its curriculum to match the Land-Grant Act's broad mandate. From that time onward, curricula in engineering, the sciences, the liberal arts, and more began to flourish. In the early 1900s, Penn State introduced cooperative extension and additional outreach programming, extending the reach of its academic mission.

An even greater segment of the Commonwealth's population had opportunities for engagement in the 1930s when Penn State established a series of undergraduate branch campuses, primarily to meet the needs of students who were location-bound during the Great Depression. Those campuses were predecessors of today's system of 24 Penn State campuses located throughout the Commonwealth.

Penn State began offering systematic advanced-degree work in 1922 with the formation of the Graduate School. Graduate education and research evolved hand in hand. By 1950 the University had won international distinction for investigations in dairy science, building insulation, diesel engines, and acoustics, and other specialized fields.

A college of medicine and teaching hospital were established in 1967 with a \$50 million gift from the charitable trusts of renowned chocolate magnate Milton S. Hershey. In 1989 the Pennsylvania College of Technology in Williamsport became an affiliate of the University. Penn State's online World Campus graduated its first students in 2000 and now enrolls more than 12,000. Also in 2000, Penn State and the Dickinson School of Law merged. In 2015, two Penn State law schools, Dickinson Law (in Carlisle, Pennsylvania) and Penn State Law (on University Park campus) were established.

MORE INFORMATION ABOUT UNIVERSITY HISTORY (<https://www.psu.edu/this-is-penn-state/history/>)

## Accreditation Notice

The Pennsylvania State University is accredited by the Middle States Commission on Higher Education (<https://www.msche.org>), 3624 Market Street, Philadelphia, PA 19104 (267-284-5000). The Middle States Commission on Higher Education (MSCHE) is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

The Pennsylvania State University was first accredited in 1921 and accreditation was reaffirmed in June 2015.

Annual Institutional Updates are submitted each spring-summer. The last Midpoint Peer Review occurs every four years and last occurred in 2020. The next Self-Study evaluation is scheduled for 2023-2024.

According to MSCHE's policy statement, Accreditation Review Cycle and Monitoring, "The Commission's eight-year cycle of review of accredited institutions begins with an in-depth institutional self-study that is reviewed by peer evaluators during an on-site evaluation visit. The self-study and on-site review are used to assess the institution's compliance with Commission standards and requirements of affiliation, verify compliance with accreditation-relevant federal regulations, and identify areas needing improvement. The review process results in an accreditation decision in accordance with the Commission Policy Accreditation actions. Institutions submit annually an update of



institutional data and other information requested by the Commission. In the fourth year following the self-study visit, the Commission conducts an off-site mid-point peer review based on the cumulative information provided by the institution. Institutions are provided a report on the institution's performance with respect to student achievement and financial sustainability."

<http://www.msche.org/documents/AccredReviewCycle.pdf>

MORE INFORMATION ABOUT ACCREDITATION BY THE MIDDLE STATES COMMISSION ON HIGHER EDUCATION (<https://opair.psu.edu/accreditation/>)

## Research

The Office of the Vice President for Research is responsible for facilitating the \$863-million-per-year research enterprise at Penn State by working with a broad range of units across the University.

The mission of the Office of the Vice President for Research is to support a rigorous program of faculty and student research and creative accomplishment by enhancing the environment for scholarly and artistic endeavors, encouraging the highest standards of quality, and fostering ethical conduct in research.

### The office is responsible for:

- the effective administration of sponsored programs which provide the financial support for a substantial share of the research activity at the University;
- serving as the University's advocate and spokesperson on research issues, and as a representative in activities that may produce major new programs and facilities for research;
- facilitating strong programs for interdisciplinary research.

MORE INFORMATION ABOUT RESEARCH AT PENN STATE (<https://www.research.psu.edu/>)

## University Structure

### Undergraduate Campuses

Penn State has more than twenty campuses across Pennsylvania that serve undergraduate students and communities through teaching, research, and service. Through its network of undergraduate campuses and World Campus, Penn State provides students the opportunity to begin and complete a Penn State degree at one campus, transition to complete a degree at another campus or complete a program completely online—this is the hallmark of Penn State's unique one University concept.

The University Park campus, the administrative and research hub of the University is the largest of Penn State's campuses. Across Pennsylvania, Penn State campuses play a critical role in the land-grant mission of the University, by providing access and opportunity—a commitment that remains at the core of each campus's mission. In addition to providing the first two years of more than 160 Penn State majors, campuses confer nearly 5,000 Penn State degrees annually to students who complete their academic programs at a Penn State campus.

MORE INFORMATION ABOUT UNDERGRADUATE CAMPUSES (<https://bulletins.psu.edu/undergraduate/campuses/>)

## Graduate and Professional Campuses

Penn State's wide range of graduate programs includes traditional residential Ph.D. research programs through part-time degree programs aimed at working professionals. Penn State offers graduate programs at six campuses: Penn State Erie, Penn State Great Valley, Penn State Harrisburg, Penn State College of Medicine, Penn State University Park, and Penn State World Campus. Penn State College of Medicine in Hershey, PA offers a complete medical education program leading to the Doctor of Medicine (M.D.) degree. Penn State has two separately accredited Law Schools: Dickinson Law in Carlisle, PA and Penn State Law at University Park.

MORE INFORMATION ABOUT GRADUATE AND PROFESSIONAL CAMPUSES (<https://bulletins.psu.edu/graduate/campuses/>)

## Colleges

Penn State's undergraduate majors are divided among academic colleges, which are the units from which students receive their degrees. Examples of colleges are Arts and Architecture, Eberly College of Science, and Education, among others. Academic colleges offer graduate programs as well; however, graduate degrees are awarded by the Graduate School. In addition to the 12 academic colleges at the University Park campus, Penn State has six academic colleges across Pennsylvania that allow students to finish their undergraduate degrees at a campus other than University Park.

With the exception of a few specialized programs, undergraduate students interested in majors offered by the above academic colleges can start their education at any Penn State campus and then transition to University Park following their second year to complete their degree as part of the 2+2 Plan.

In addition, the Pennsylvania College of Technology in Williamsport offers undergraduate enrollments in selected degree programs.

For a list of academic colleges, enrollment units, and special academic programs visit the Undergraduate Bulletin Colleges (<https://bulletins.psu.edu/undergraduate/colleges/>) page.

### Academic Colleges at Campuses

Six Penn State colleges, located throughout the state, offer undergraduate majors that are typically completed at campuses other than University Park. These colleges are:

- Abington College, at the Penn State Abington campus
- Altoona College, at the Penn State Altoona campus
- Behrend College, at the Penn State Erie campus
- Berks College, at the Penn State Berks campus
- Capital College, at the Penn State Harrisburg campus
- University College, is comprised of the following 14 campuses:
  - Penn State Beaver
  - Penn State Brandywine
  - Penn State DuBois
  - Penn State Fayette, The Eberly Campus
  - Penn State Greater Allegheny
  - Penn State Hazleton
  - Penn State Lehigh Valley
  - Penn State Mont Alto
  - Penn State New Kensington
  - Penn State Schuylkill

- Penn State Shenango
- Penn State Wilkes-Barre
- Penn State Scranton
- Penn State York

Students interested in undergraduate majors offered by these colleges can typically start at one campus and finish at another through the 2+2 plan, or they can choose to stay at one campus for all four years if their campus of choice offers the major they want. To see the specific undergraduate majors available at each campus, search majors by campus in the Undergraduate Bulletin (<https://bulletins.psu.edu/undergraduate/>).

## Student Services and Programs

Penn State offers thousands of resources to support students, faculty, staff, and alumni both locally and around the world. This partial list of centers, offices, and programs was developed based on past inquiries from Bulletins users.

To discover additional services explore Penn State's home page (<https://www.psu.edu/>), the Office of Student Affairs (<https://studentaffairs.psu.edu/>), and the Office of Undergraduate Education (<https://undergrad.psu.edu/>), and The Graduate School (<https://gradschool.psu.edu/>).

- Affirmative Action Office (<https://affirmativeaction.psu.edu/>)
- Adult Learner Programs & Services (<https://studentaffairs.psu.edu/adults/>)
- Campus Recreation (<https://studentaffairs.psu.edu/campusrec/>)
- Career Services (<https://studentaffairs.psu.edu/career/>)
- Child Care Resources (<https://hr.psu.edu/employee-and-family-resources/your-family/child-care-resources/>)
- Counseling and Psychological Services (<https://studentaffairs.psu.edu/counseling/>)
- Disability Services Resources (<https://equity.psu.edu/student-disability-resources/>)
- Spiritual and Ethical Development, Center for (<https://studentaffairs.psu.edu/spiritual/>)
- Financial Literacy and Wellness Center (<https://financialliteracy.psu.edu/>)
- Fraternity and Sorority Life (<https://studentaffairs.psu.edu/involvement-student-life/fraternity-and-sorority-life-penn-state/>)
- Gender Equity Center (<https://studentaffairs.psu.edu/genderequity/>)
- Global Programs, Office of (<https://global.psu.edu/>)
- Graduate Educational Equity Programs, Office of (<https://gradschool.psu.edu/diversity/>)
- Graduate Writing Center (<https://gwc.psu.edu/>)
- Health Services (<https://studentaffairs.psu.edu/health/>)
- Information Technology at Penn State (<https://it.psu.edu/>)
- Multicultural Resource Center (<https://equity.psu.edu/mrc/>)
- Off-Campus Student Support (<https://studentaffairs.psu.edu/offcampus/>)
- Outreach and Online Education (<https://www.outreach.psu.edu/>)
- Paul Robeson Cultural Center (<https://studentaffairs.psu.edu/cultural/>)
- Penn State Learning (<https://pennstatelearning.psu.edu/>)
- Residence Life (<https://studentaffairs.psu.edu/reslife/>)

- Sexual and Gender Diversity, Center for (<https://studentaffairs.psu.edu/csgd/>)
- Student Affairs, Office of (<https://studentaffairs.psu.edu/>)
- Student Care & Advocacy (<https://studentaffairs.psu.edu/studentcare/>)
- Undergraduate Research and Fellowships Mentoring (<https://urfm.psu.edu/>)
- Student Conduct, Office of (<https://studentaffairs.psu.edu/conduct/>)
- Student Organization Directory (<https://studentaffairs.psu.edu/involvement-student-life/student-organizations/>)
- Summer Session (<https://summersession.psu.edu/>)
- Veterans Programs, Office of (<https://equity.psu.edu/veterans/>)
- University Libraries (<https://libraries.psu.edu/>)

## MD Program

### Overview

Penn State College of Medicine offers a complete medical education program leading to the MD degree. Its central campus is located in Hershey, PA adjacent to Penn State Health Milton S. Hershey Medical Center, which is a part of Penn State Health's multi-hospital health system.

In addition to the program's central curriculum in Hershey, there are two parallel curricula options within the overall medical education program. Our Accelerated Pathways are located on the central campus in Hershey, and our University Park Curriculum is located in University Park, PA.

### Our Vision

Our goal is to train humanistic, systems-ready physicians who are adaptive, critical-thinking, collaborative, and scholarly.

All students will be expected to meet our 10 competencies (<https://students.med.psu.edu/md-students/medical-student-competencies-and-subcompetencies-for-graduation/>) and minimum essential standards ([https://students.med.psu.edu/md-students/handbook/#question\\_minimumessentialstandardsformatriculationpromotionandgraduation](https://students.med.psu.edu/md-students/handbook/#question_minimumessentialstandardsformatriculationpromotionandgraduation)) before graduating with an MD degree.

### Our Four-Pillar Model

Traditionally, medical education has focused on two pillars: medical science and clinical care. As healthcare delivery rapidly shifts from physician-centric to patient-centric, and patient care involves both the care of the individual and the care of populations, a more comprehensive model is needed.

At Penn State College of Medicine, the two pillars have transformed to four:

- Biomedical Sciences
- Health Humanities
- Clinical Science
- Health Systems Sciences

As an MD student, you will learn health, healing, and humanity through:

- Early patient experiences
- Small-group learning teams
- Longitudinal care in a team-based medical home
- Peers helping each other

- Quality improvement
- Supportive environment

## Admission Requirements

Penn State University College of Medicine is committed to developing tomorrow's diverse group of humanistic, systems-thinking physicians who will serve people in times of health and in times of illness. We seek strong applicants who come to medicine with a passion to serve and a commitment to excellence and life-long learning. In today's rapidly changing healthcare environment, physicians must acquire a depth of understanding in the life sciences, humanities, clinical sciences and health system sciences. We seek students who bring a full, rigorous and holistic background of study and experiences to medical school and who are poised for the depth and breadth of learning demanded for tomorrow's physician scholars and leaders.

We accept students in good standing who will be graduates of accredited colleges and universities in the U.S. or Canada before matriculation to Penn State College of Medicine. There are no restrictions on the type of major a student chooses. The Medical College Admission Test (MCAT) is required and used along with other data to predict success in our educational program

## Prerequisite Preparation For Admission

Penn State College of Medicine recognizes that its applicants bring varied and rich undergraduate academic and personal experiences to their admissions credentials. In order to acknowledge the diversity and flexibility of preparation of our applicants, we have chosen to describe the competencies we expect of our students at the time of entry into medical School. Instead of listing prerequisite course requirements, we describe required competencies that will most often be met through traditional and/or newly established interdisciplinary courses of study in an accredited institution of higher learning. We define competency as the acquired knowledge to solve problems in the discipline. Applicants will indicate whether the acquired competency was obtained by course work or other activity such as research or work. Competitive applicants should demonstrate competency in each of the following five areas adapted from the MCAT description (<https://students-residents.aamc.org/applying-medical-school/article/whats-mcat-exam/>):

- **Biological and Biochemical Foundations of Living Systems:** The contribution of biomolecules to the structure and function of cells; the interaction of molecules, cells, and organs in carrying out the functions of living organisms; the interplay of complex systems, tissues and organs in sensing internal and external environments and maintaining internal environment stability in the setting of changing external environments.
- **Chemical and Physical Foundations of Biological Systems:** Application of physical principles to explain how complex living organisms transport materials, sense their environment, process signals and respond to changes; use of principles that govern chemical interactions and reactions to form the basis for the molecular dynamics of living systems.
- **Psychological, Social and Biological Foundations of Behavior:** Biological, psychological and sociocultural factors that influence how individuals perceive, think about and react to the world; how they influence behavior and behavior change, how we think about ourselves and interact with others, and how they influence well-being and access to resources that influence well-being.
- **Critical Analysis and Reasoning Skills:** Comprehension of texts, extrapolating ideas to new contexts; assessing the impact of

introducing new factors, information or conditions to ideas from the text.

- **Scientific Inquiry and Thinking & Reasoning:** Knowledge of scientific principles, scientific reasoning and problem-solving, reasoning about the design and execution of research, data-based statistical reasoning, and general mathematical concepts and techniques.

Mastery of competencies is reflected by a strong performance in the classroom and on the MCAT, knowledge gained from formative experiences, and letters of reference. Applicants should have engaged in-depth study based on the AAMC-HHMI Scientific Foundations for Future Physicians (<https://store.aamc.org/scientific-foundations-for-future-physicians-pdf.html>) and AAMC-Behavioral and Social Science Foundations for Future Physicians (<https://store.aamc.org/behavioral-and-social-science-foundations-for-future-physicians-pdf.html>).

In addition to the above Science and Thinking & Reasoning competencies, Penn State College of Medicine expects applicants to demonstrate achievement of Interpersonal and Intrapersonal competencies. The following competencies are derived from the interpersonal and intrapersonal descriptions within the AAMC Core Competencies for Entering Medical Students (<https://students-residents.staging.aamc.org/applying-medical-school/article/core-competencies/>).

- **Interpersonal:** desire to help others; aware that social and behavioral cues affect interactions and behaviors; interacts effectively with people from diverse backgrounds; works collaboratively in teams; listens effectively and conveys information clearly.
- **Intrapersonal:** behaves in an honest and ethical manner; fulfills obligations in a timely and satisfactory manner; tolerates and adapts to stressful or changing environments; sets for continuous improvement; reflects on actions and solicits feedback.

## Coursework and Experience

Though the most common methods of becoming competent in the Science, Thinking & Reasoning, Interpersonal and Intrapersonal competencies will be formal coursework and personal experiences, we acknowledge that students may accomplish the learning in other ways. Alternative methods of preparation, in combination with coursework, might include research or employment experiences.

## Advanced Placement Coursework

Penn State College of Medicine recognizes advanced placement courses for competencies only if they appear as earned credit on the applicant's college transcript. However, many of the most competitive applicants have fulfilled advanced course work in those same areas during their baccalaureate years.

## How to Apply

We encourage students from diverse backgrounds who have strong potential for leadership and service in broad areas of patient care, research, medical education, administration, and service to apply to our program.

The education of a physician comprises a preparatory phase in college, a rigorous course of professional education leading to the MD degree, postgraduate or residency training, and lifelong continuing education after the conclusion of formal training.

The award of the MD degree signifies the individual has acquired a broad base of knowledge and skills requisite for the practice of medicine.

The medical school educational process prepares an individual to be a physician — not a surgeon, psychiatrist, or any other specialist.

We require an online application to be submitted through AMCAS (<https://www.aamc.org/students/applying/amcas/>) and a secondary application for the College of Medicine. Applicants judged to be most qualified are invited for an interview mid-September through March. See a detailed application timeline with deadlines (<http://med.psu.edu/md/apply/deadlines/>).

## Application Process

When applying to the MD Program, please adhere to the following procedure and guidelines:

- Complete and submit an online application (<https://www.aamc.org/students/applying/amcas/>) to the American Medical College Application Service (AMCAS), indicating Penn State College of Medicine as one of your medical schools of choice. For more information, call the Association of American Medical Colleges (AAMC) at 202-828-0600.
- Upon receipt of your initiated AMCAS application, beginning in July, Penn State College of Medicine will notify you via email to complete and submit our web-based Secondary Application.
- Provide AMCAS with official transcripts, service fees, and letters of recommendation. AMCAS will verify application information and send it electronically to Penn State College of Medicine. We must receive your fully verified and processed AMCAS application by November 15.
- Applicants seeking an application fee waiver are reviewed on an individual basis only after an AMCAS fee waiver has been granted and appropriate documentation submitted.
- Letters of recommendation are required from each institution that has granted you a degree and any institution you are attending or plan to receive a degree. A composite recommendation from a pre-professional committee is strongly recommended. If there is no such committee, letters should be solicited from individual faculty members as outlined in the secondary application instructions. If there is a pre-professional committee and a recommendation will not be forthcoming, you should explain why in a separate letter to the admissions committee. Applicants who have been enrolled in a graduate program are required to provide an additional letter of support from their graduate program. Please note: The College of Medicine is only accepting letters through the AMCAS letter system (<http://www.aamc.org/students/amcas/faq/amcasletters.htm>). You must send, or have sent, your letters directly to AMCAS. Please reference the website above or call AMCAS at 202-828-0600 for further clarification.
- It is the policy of the College of Medicine not to grant requests for late application.
- It is the applicant's responsibility to see that the application is complete. A completed application is one in which all necessary materials have been submitted with all questions on each form completely and answered, the \$80 application fee has been paid, and the required letters of recommendation have been received and processed by AMCAS.

## Correspondence Policy

The "preferred" addresses (mail and email) on applicants' AMCAS applications are the addresses to which any printed correspondence from Penn State College of Medicine will be sent. If your preferred addresses (mail or email) change after you have submitted your application to AMCAS, you will need to enter the new addresses on your electronic

application, then re-certify and re-submit your application to AMCAS with the updated addresses.

Email is a primary and official mode of communication between the College of Medicine and its applicants. Some correspondence from the College of Medicine is sent only by email and will not be sent to you unless you provide an email address. Due to the importance of the admissions process, we recommend that applicants establish a unique email address for during the process and check that email address regularly throughout the process. Be sure to keep both your email address and your preferred address up-to-date at all times.

It is the sole responsibility of the applicant to make sure that the email address indicated as "preferred" on the AMCAS application is functional. The College of Medicine is not responsible for email that unable be delivered or for emails deleted as bulk, spam, or the like.

## Interview Process

The interview is an essential component of the selection process. It provides vital information about the applicant that is impossible to obtain by any other means.

Faculty interviews with critical evaluations are the only method within the admissions process for the assessment of the important nonacademic attributes of applicants. The selection committee places great importance on these evaluations in making decisions on admission.

**Dates:** Monday, Wednesday and Friday, mid-September through March.

**Interview day:** One half of the applicants will interview in the morning and the other half in the afternoon. Both groups will tour the facility and lunch together. Two or three faculty members will interview each applicant.

## Interview Agenda

### Group 1

8:30 a.m.: Arrival and registration  
8:45 a.m.: Welcome and overview of day's activities  
9 to 11 a.m.: Faculty interviews

### Group 2

10:30 a.m.: Arrival and registration  
10:45 a.m.: Welcome and overview of day's activities

### Groups 1 and 2

11:15 a.m.: College of Medicine presentation and Q&A  
Noon: Lunch with medical students  
1 p.m.: Tour of College of Medicine and Medical Center Complex

### Group 1

2 p.m.: Group checks out and is finished for the day

### Group 2

2 to 4 p.m.: Faculty interviews  
4:15 p.m.: Group checks out and is finished for the day

Official action following the interview is made by the medical student selection committee. The action taken by the committee may be acceptance, hold, or rejection. Candidates will be notified of a decision within six to eight weeks of the interview.

## International Applicants

International applicants must complete all academic requirements for admissions in an accredited United States or Canadian college or university.

They must also follow the same application procedures (<http://med.psu.edu/md/apply/process/>), and adhere to the same timeline and deadlines (<http://med.psu.edu/md/apply/deadlines/>) as domestic applicants.

### Obtaining Visa Eligibility Documentation

If you're accepted to the College of Medicine, you will need to officially accept your offer of admission. After you have accepted your offer of admission, the Directorate of International Student and Scholar Advising (DISSA) will contact you by email to provide you with a link and a set of instructions for how to access their online system (iStart).

There, you will be directed to work through a pre-arrival checklist that helps guide newly admitted international students through the process of requesting visa eligibility documentation (I-20/DS-2019) and/or gaining clearance to register for classes, in addition to other crucial steps toward attending the Penn State College of Medicine.

**Please note:** All newly admitted international students need to access DISSA's iStart system and complete the **Request I-20/DS-2019 OR Provide Current Visa Documentation** step. It can take DISSA two to three weeks to process requests for an I-20/DS-2019. If you are outside the U.S. and must apply for a student visa, you should submit your request for an I-20/DS-2019 no later than May 15 of your year of matriculation, to allow time for you to obtain a visa and make travel arrangements. Please be guided accordingly in submitting documents to DISSA.

Accepted international applicants are sent a checklist detailing the above requirements, as well clearly indicating the deadlines for submission of these documents.

If the checklist items are not fulfilled by the indicated deadlines, candidates will be withdrawn from the entering class without the possibility of reinstatement.

### Financing Your Medical Education

Accepted international applicants must verify the ability to finance their medical education. Foreign nationals are not eligible for financial support from the federal government or Penn State University. Learn about the financial aid verification procedure for Penn State University and the College of Medicine (<https://global.psu.edu/category/you-arrive/>).

### Questions?

If you have questions about your application or about admissions, please contact the Penn State College of Medicine Office of Student Affairs at 717-531-8755 or [StudentAdmissions@pennstatehealth.psu.edu](mailto:StudentAdmissions@pennstatehealth.psu.edu).

If you have questions about your proof of finances and the verification procedure, please contact Student Aid at 717-531-7052 or [StudentAid@pennstatehealth.psu.edu](mailto:StudentAid@pennstatehealth.psu.edu).

## Core Curriculum and Competencies

The central curriculum and the two parallel tracks share numerous curricular elements, the result of deliberate educational program design that ensures comparability. At the core, they share the same vision, core curriculum, four-phase curriculum framework and the same graduation and education program competencies.

## MD Program Vision

To guide the development of a humanistic, systems-ready physician who is adaptive, critical thinking, collaborative and scholarly.

### Core Curriculum

The core curriculum, defined by the Committee on Undergraduate Medical Education (CUMED) is built on a four-pillar framework of 1) Biomedical Sciences, 2) Health Humanities, 3) Clinical Sciences, and 4) Health Systems Sciences.

### Four-Phase Curriculum Framework

The central curriculum and the two parallel curricula are designed around a four-phase framework:

- **Phase I - Foundations:** Students in Penn State College of Medicine, whether in the Hershey central curriculum (HC), the 3+ parallel track at Hershey (HC3+) or the University Park curriculum parallel track (UPC) engage in two common instructional formats – small group problem-based learning and direct patient experiences – with variations on the intensity with which each is used. For both HC and HC3+ lectures supplement the instructional formats. At UPC, which is a “no lecture” track, the more extensive small group problem-based learning sessions, which are referred to as Inquiry groups (IQ), and science seminars serve as the instructional formats that subsume the content expectations typically delivered in lectures. Students in HC/HC3+ take the foundational courses sequentially prior to clerkships. Students in UPC take some foundational courses before and some after clerkships.
- **Phase II - Clinical Core:** Student all complete the same eight core clerkships, though the instructional format may be blocks or longitudinal. All students must take USMLE Step 1 before progressing to Phases III/IV.
- **Phase III/IV - Discovery & Residency Prep:** Two required courses – Translating Health Systems Science to the Clinical Setting and Profession of Medicine III (Transition to Residency) are common for all students. Additionally, all students must complete two acting internships, a Humanities selective, and electives to enhance their competency-directed progression in learning, professional identity formation and residency preparation.

The phases intersect and transitions are flexible, depending on the curriculum option.

### Core Competencies

The 10 core competencies for Penn State College of Medicine are:

1. Patient care
2. Knowledge for practice
3. Practice-based learning and improvement
4. Interpersonal and communication skills
5. Professionalism
6. Systems-based practice
7. Inter-professional collaboration
8. Personal and professional development
9. Medical humanities
10. Critical thinking

The central Hershey Curriculum and the two parallel curricula share, in addition, the following:

- Governed by the same curriculum committee (CUMED)
- Participate in the same course and clerkship directors' subcommittees of CUMED
- Report to the same Vice Dean for Educational Affairs
- Grades reported through a single individual
- Use the same curriculum management system
- Use the same student assessment system
- Use the same standardized approach to formative feedback
- Use the same mid-rotation feedback forms
- Use the same school-wide policies on mistreatment and respect in the learning environment
- Use the same criteria for grades in courses and clerkships
- Have the same clerkship requirements, NBME shelf exams and methods of grade calculations
- Use the same evaluation system for end of course and clerkship student feedback
- Require the Medical Student Research Project (MSR) for all students

## Hershey Curriculum

The practice of medicine is undergoing major changes. Many of these changes are part of a transformation that will alter the way healthcare is organized and delivered in the future.

The four-phase curriculum is learner-centered and has been developed to prepare you for a successful career in a more integrated healthcare system.

The committee on undergraduate medical education, composed of faculty and students, meets regularly to evaluate and modify the curriculum to keep pace with new knowledge and changes in healthcare delivery.

Through our curriculum, you will gain:

- A well-grounded connection between medical science and patient care
- A commitment to evidenced-based medicine
- An appreciation of the patient experience of illness
- A commitment to humanistic patient care
- Advocacy for access to all and reduction in healthcare inequities

## Patient Navigator Program

Penn State College of Medicine is among 11 of the nation's medical schools — including the University of Michigan, Vanderbilt, and NYU — to be awarded a \$1 million grant from the American Medical Association to transform the way medical students are prepared for today's health system. One of our initiatives is the patient navigator program, an opportunity for students to guide patients through the complicated process of getting the care they need.

MORE INFORMATION ABOUT THE PATIENT NAVIGATOR PROGRAM (<http://med.psu.edu/md/hershey/>)

## Emphasis on Humanities

We value the art of healing — not just the science of it. Penn State College of Medicine was the first medical school in the country to have a dedicated humanities department, and this focus is reflected in our curriculum:

- **Phase 1:** Humanities coursework every Tuesday morning
- **Phase 2:** Humanities stripe across clerkships (“backstory rounds”)
- **Phase 4:** Month-long humanities selective (required). Recently offered courses include:
  - Human Virtue
  - Jazz and the Art of Medicine
  - Graphic Storytelling (<http://sites.psu.edu/graphicnarratives/>)
  - Medical Narratives

Additional humanities activities include the Farmers Market in Hershey, the arts and literature journal Wild Onions (<http://sites.psu.edu/wildonions/>), and the Kienle Center Players (<http://sites.psu.edu/kienlecenter/>), a drama group.

## Curriculum

### Year 1

- **Transition to Medical School**
  - *Two weeks in the middle of July*
  - This course, the first you will attend at Penn State College of Medicine, is designed to help you make the transition to medical education and training and to begin to build some of the skills necessary for success in medical school and a career in medicine. The transition to medical school is a very important time in the life of every doctor. No longer are you in college or a master's program, striving for high grades as an end in and of themselves, or as a ticket to gaining admission to medical school.

These first weeks mark that time when you join the collegial ranks of the profession, and medical school represents the first step of on-the-job training. The Transitions series continues throughout your medical school curriculum as you transition into clinical rotations and prepare for residency.

- **Medical Humanities**
  - *Early August to Mid-December*
  - Medical Humanities includes topics such as empathy, suffering and resilience, and the cultures of medicine and medical education.
- **The Science of Mind-Body**
  - *January to Mid-February*
  - The Science of Mind-Body explores topics such as placebos, learned helplessness, behavior change and groupthink.
- **Critical Thinking**
  - *End of February to End of April*
  - Critical Thinking takes up topics such as metacognition, cognitive errors and biases, intuitive versus analytic thinking, and medical decision-making in the face of uncertainty.
- **Science of Health Systems**
  - *End of July through February, with breaks*
  - This longitudinal course spans the full medical school experience with the main focus in Phases 1 and 2. In this new health systems component, students will experience a new Science of Health Systems curriculum, where they will learn the foundations of health systems, health care delivery, financing, insurance, population and public health, socio-ecological medicine, quality, safety, value, and teamwork and leadership. Additionally, students will serve as patient navigators within the health system. Both the curriculum and patient navigator experience will allow students to

develop the knowledge, skills, and attitudes to function effectively amid the complexities of an evolving health system.

- **Foundations of Patient-Centered Care**

- *Middle of July through February, with breaks*
- This longitudinal course, which spans phases I and II of medical school training at Penn State College of Medicine, is administered within each student's respective Society and is integrated with other first- and second-year courses. The course consists of three components: communication/clinical interviewing, physical examination, and integration, application and advancement teaching sessions.

- **Scientific Principles of Medicine**

- *End of July through Mid-September*
- This course will provides a wide-range of scientific knowledge that underlies medical practice. Relevant material for SPM is drawn from biochemistry, physiology, histology, genetics, cell biology, molecular biology, and hematology. In addition, fundamental concepts of pharmacology are introduced. Because of the breadth and depth of material presented in this course, SPM is a team-taught course involving faculty with multiple expertise. As a consequence of this diversity, you will be exposed to a number of different teaching philosophies.

- **Host Defense/Host Response**

- *Mid-September to Mid-November*
- The Host Defense/Host Response (HDHR) course addresses how the body maintains wellness and responds to threats. The primary learning goals focus on concepts in microbiology and infectious disease, immunology and oncology. This eight-week integrated course spans September to November of the Phase I first year. Problem-based learning (PBL) serves as the course's backbone, complemented by large-group interactive sessions, patient encounters and clinical reasoning sessions. There are also opportunities to integrate Health Systems Science, Health Humanities and frontiers of inquiry to add perspective and depth to the learning experience.

- **Form and Function**

- *Mid-April to End of May*
- This course has three major components. The first is dedicated to orthopedics, the second to rheumatology, and the third to dermatology. The course integrates dermatology, immunology, family medicine (sports medicine), internal medicine (rheumatology), orthopedics, pathology, and pediatrics (rheumatology). The subject matter is linked as joint disease connects orthopedics and rheumatology and, immunology connects rheumatology and dermatology. The lecture content and problem-based learning cases will help to illustrate the "connectedness" of this block of material.

- **CardioRespiratory Medicine and Anatomy**

- *Mid-November to End of February*
- The CardioRespiratory and Anatomy course is the students' first intensive exposure to integrative physiology. Cardio-Respiratory Medicine requires mastery of cardiovascular and respiratory physiology, anatomy, embryology, histology, pathology, immunology and pharmacology, as well as the clinical science underlying cardiovascular and respiratory disease.

Lectures and problem-based learning cases are augmented by hands-on EKG sessions, training in the techniques of cardiac physical examination, workshops, lung and heart sounds simulations and a ventilation simulation laboratory. Cardiovascular disease remains a leading killer of Americans and lung disease is prevalent; knowledge gained here will be useful throughout your entire medical career.

- **Renal Medicine**

- *End of February to End of March*
- The course provides an introduction to the physiology, anatomy, pharmacology, microbiology, and pathology of the kidneys and urinary tract. Topics include the relationship between structure and function of urinary system; fluid, electrolyte and acid/base homeostasis in health and disease; etiology and manifestations of common diseases of the kidneys; and cellular processes that mediate the actions of pharmacological agents active in the urinary system.

- **Clinical Skills Immersion**

- *End of March / Beginning of April*
- This is a week of clinical skills immersion.

- **Primary Care Preceptorship**

- *One week in April*
- The Primary Care Preceptorship is an optional experience during spring break that provides an opportunity for first-year medical students to participate in an organized educational experience with physicians who are board certified in the specialties of family medicine, internal medicine, and/or pediatrics. This course is scheduled for one week and requires each student to complete 40 hours within the ambulatory care setting of his/her designated preceptor.

All clinical training sites are reviewed to ensure the learning environment can provide students with the opportunity to achieve defined learning objectives and the physicians who teach are up-to-date on board certifications. The course offers a clinical experience early in the students' medical education and exposure to the fundamentals of patient care within the emerging models of health care in the 21st century. Students are offered clinical training experiences within the setting of the Commonwealth of PA, participating practices nationally, and an international track in affiliation with Global Brigades.

- **Objective Structured Clinical Examination (OSCE)**

- *May*
- This exam allows students to practice and demonstrate clinical skills in a standardized medical scenario. Students have the opportunity to demonstrate competency in communication, history taking, physical examination, clinical reasoning, medical knowledge, and integration of these skills. It is meant to be a fair and accurate way to assess competence, as well as identify areas that need more work and practice.

- **Medical Student Research and Global Health**

- *Summer, end of Year 1*
- Over the summer, students have the opportunity to do research for the Medical Student Research project and/or participate in Global Health opportunities.

## Year 2

### • Medical Student Research and Global Health

- *Summer, Start of Year 2*
- Over the summer, students have the opportunity to do research for the Medical Student Research project and/or participate in Global Health opportunities.

### • Medical Ethics and Professionalism

- *August through Mid-December*
- Medical Ethics and Professionalism provides students with a framework for decision making in the face of common ethical challenges and addresses issues involving autonomy, informed consent, advance care planning, medical mistakes and truth-telling.

### • Science of Health Systems

- *August through Mid-February, with breaks*
- This longitudinal course spans the full medical school experience with the main focus in Phases 1 and 2. In this new health systems component, students will experience a new Science of Health Systems curriculum, where they will learn the foundations of health systems, health care delivery, financing, insurance, population and public health, socio-ecological medicine, quality, safety, value, and teamwork and leadership. Additionally, students will serve as patient navigators within the health system. Both the curriculum and patient navigator experience will allow students to develop the knowledge, skills, and attitudes to function effectively amid the complexities of an evolving health system.

### • Foundations of Patient-Centered Care

- *August through End of January, with breaks*
- This course, which spans Phases I and II of medical school training at Penn State College of Medicine, is administered within each student's respective Society and is integrated with other first- and second-year courses. The course consists of three components: communication/clinical interviewing, physical examination, and integration, application and advancement teaching sessions.

### • Gastroenterology and Nutrition & Anatomy

- *August to Mid-September*
- This course provides exposure to the foundational basic science and advanced concepts necessary to understand the approaches used to diagnose, treat and manage disorders of nutrition, the oropharynx, esophagus, stomach, small and large bowel, pancreas, biliary system and liver. Foundational material will include integrative physiology of these organs.

The students will develop the ability to differentially diagnose, describe treatments, and review management of nutritional disorders and support as well as diseases of the GI organs and liver. The pathogenesis, pathology, differential diagnosis, clinical course, and complications of GI and liver diseases will be covered along with aspects of clinical management, especially the pharmacology of drugs used to treat them. The course will augment large-group classroom learning opportunities with problem-based learning, wet laboratory and simulation laboratory experiences.

### • Endocrinology and Reproductive Medicine and Anatomy

- *Mid-September through Mid-November*
- The goal of this course is to learn about the general principles, physiology actions, causes and consequences of insufficiency or excess chemical messengers that function as hormones. These principles are then incorporated into the anatomy, histology and physiology of the female and male reproductive system, including pregnancy. Basic disease processes and therapeutics, including pharmacology, are also covered.

### • Neural and Behavioral Science and Anatomy

- *Mid-November to Middle of February, with break*
- NBS incorporates basic neuroanatomy, neurophysiology, neurology, neuropathology, neuropharmacology, anesthesia, ophthalmology, radiology, behavioral science, and psychiatry. The goal is for students to understand the structure of the human nervous system, the biological mechanisms that underlie the functions of the nervous system, the neural basis of behavior, and the diagnosis, pathology and treatment of diseases that affect the nervous system by incorporating these topics with clinical relevance. The course also includes pathology wet labs and Neurology Day, where students interact in small groups with 14 patients who have various neurological disorders.

### • Communication

- *Beginning of January to Beginning of February, with break*
- Communication focuses on exploring assumptions and biases that impact communication and communicating in dyads, teams, and larger systems.

### • Objective Structured Clinical Examination (OSCE)

- *December*
- This exam allows students to practice and demonstrate clinical skills in a standardized medical scenario. Students have the opportunity to demonstrate competency in communication, history taking, physical examination, clinical reasoning, medical knowledge, and integration of these skills. It is meant to be a fair and accurate way to assess competence, as well as identify areas that need more work and practice.

### • Transition to Clerkships

- *End of February*
- This course focuses on successfully transitioning students from preclinical to clinical training, building on the knowledge and clinical skills covered in Phase I. It includes advanced clinical skills training through simulation as well as several fundamental medical principles from various specialties that will be expanded and reinforced in subsequent clerkships. In addition, roles and responsibilities of a third-year medical student are covered through discussions on reflection, professionalism, and communication.

### • Clerkships

- *Beginning at the End of February*
- Required core clinical clerkships begin toward the end of Year 2. Clerkships are taught in three blocks. See clerkship details here (<https://students.med.psu.edu/md-students/clerkships/>).
  - Block 1 clerkships are end of February through mid-June.
  - Block 2 clerkships are mid-June through mid-September.
  - Block 3 clerkships are mid-September through December.



- **Health Systems in Clerkships**
  - Health systems is embedded in the clerkships; there is an in-depth focus on health systems in the health equity clerkship.
- **Humanities (Kienle Groups)**
  - *Select Fridays during Clerkships, March through January*
  - The Kienle Group curriculum is part of a broader Humanities stripe across the entire Penn State curriculum and provides an opportunity for students to talk candidly about their personal challenges and perspectives as they move through their clinical clerkships. The sessions take place on designated Fridays during the course of the clerkship year.
- **Clinical Assessment Week, Career Exploration and Synthesis**
  - *June*
  - Students take shelf exams during assessment weeks at the end of each block. The Career Exploration and Synthesis session will take place over a week and a half.
- **Integrated Science**
  - *Selected Fridays during Clerkships, March through January*
  - This course will focus on building an integrated sciences approach into third-year medical students' clinical training. Mastery of the processes covered by the course will enhance students' ability to think critically about complex, clinical problems through the respective lenses of biomedical sciences, systems and social sciences. This course incorporates a humanities stripe, known as Kienle Groups, dedicated to student reflection on clinical experiences while providing a supportive environment for sharing difficulties and insights.

### Year 3

- **Clerkships**
  - *Beginning at the End of February*
  - Required core clinical clerkships begin toward the end of Year 2 and continue in Year 3. Clerkships are taught in three blocks. See clerkship details here (<https://students.med.psu.edu/md-students/clerkships/>).
    - Block 1 clerkships are end of February through mid-June.
    - Block 2 clerkships are mid-June through mid-September.
    - Block 3 clerkships are mid-September through December.
- **Assessment Weeks, Career Exploration and Synthesis**
  - *September, December*
  - Two-week Career Exploration and Synthesis courses occur after the third rotation of each block. Students take shelf exams during assessment weeks at the end of each block.
- **Integrated Science**
  - *Select Fridays during Clerkships, March through January*
  - This course will focus on building an integrated sciences approach into third-year medical students' clinical training. Mastery of the processes covered by the course will enhance students' ability to think critically about complex, clinical problems through the respective lenses of biomedical sciences, systems and social sciences. This course incorporates a humanities stripe, known as Kienle Groups, dedicated to student reflection on clinical experiences while providing a supportive environment for sharing difficulties and insights.
- **Kienle Groups**
  - *Select Fridays during Clerkships, March through January*
  - The Kienle Group curriculum is part of a broader Humanities stripe across the entire Penn State curriculum and provides an opportunity for students to talk candidly about their personal challenges and perspectives as they move through their clinical clerkships. The sessions take place on designated Fridays during the course of the clerkship year.
- **Health Systems in Clerkships**
  - Health systems is embedded in the clerkships; there is an in-depth focus on health systems in the health equity clerkship.
- **Objective Structured Clinical Examination (OSCE)**
  - *January*
  - This exam allows students to practice and demonstrate clinical skills in a standardized medical scenario. Students have the opportunity to demonstrate competency in communication, history taking, physical examination, clinical reasoning, medical knowledge, and integration of these skills. It is meant to be a fair and accurate way to assess competence, as well as identify areas that need more work and practice.
- **USMLE Study**
  - *January through March*
  - Upon completion of Phase II clerkships, students are given a dedicated study period for USMLE I.
- **Translating Health Systems**
  - *End of March*
  - Phase III begins with a two-week Translating Health Systems intersession. This course is designed to help students apply concepts of patient safety, quality improvement, value and teams to the clinical setting. It provides students with opportunities to actively identify patient safety issues and develop a quality improvement project proposal. By design, this course emphasizes teamwork, an essential component in providing quality patient care. The goal is to guide learning in these concepts so that students will have the base knowledge to help improve care of their patients and the health system in which they will work during the fourth year of medical school and in residencies.
- **Phase III: Discovery**
  - Students enter Phase III: Discovery following USMLE Board Prep. The Discovery Phase provides students with opportunities for additional career explorations, time to synthesize principles learned in Phase II and additional time for focused research. This phase includes the Translating Health Systems course, where students apply learned health systems principles. As students confirm their residency choice, they move into Phase IV, Residency Prep.
- **Phase IV: Residency Prep**
  - Phase IV: Residency Prep provides students with opportunities to refine knowledge and skills as they prepare for entry into residencies. This phase includes variety of electives, two acting internships and a Humanities selective. Students also prepare for and take the USMLE Step 2 CK and CS in the earlier part of Year 4. The phase is completed by the capstone course, Transition to Internship, followed by graduation.

## Year 4

### • Phase IV: Residency Prep

- *July to May, with breaks*
- Phase IV includes residency preparation, interviews and two total acting internships in different clinical fields or one acting internship and one critical care rotation.

Additional requirements include one humanities selective, completing six total electives (to include electives from Phase II and Phase III, and the Transition to Internship course). All graduation requirements are confirmed to be completed during this time. The College of Medicine offers a variety of clinical, teaching and research electives for students during this phase.

### • USMLE Step 2 CK & CS

- *July to October*
- Students prepare for and take the USMLE Step 2 CK and CS in the earlier part of Year 4.

### • Transition to Internship

- *Beginning of May to Mid-May*
- The Transition to Internship course occurs at the end of each student's medical school career and builds on these concepts in preparation for residency training. Transition to Internship is the final requirement for each graduating fourth-year medical school class, taking place just prior to medical school graduation. Its structure includes both large group workshops (involving the entire fourth-year class) and a number of small group "selective" sessions. Transition to Internship was designed with goals of providing review and practice of key clinical skills and concepts, as well as introduction of new information regarding communication and collaboration with other health professionals, teaching and evaluation strategies for interns in their educator roles and practice in effective patient handoffs. The course also includes time for reflection on professional responsibilities, personal stressors and individual support systems.

### • Graduation

- *Mid-May*
- See the graduation section of this site (<https://students.med.psu.edu/graduation-information/>) for more details.

## University Park Curriculum

Penn State College of Medicine's University Park curriculum uses an exciting inquiry-based educational model to promote learning. Our curriculum uses early clinical exposure to provide students with early exposure to patient care. This forms the substrate to holistically prepare students for the ongoing practice of evidence-based medicine in a rapidly changing healthcare environment.

Penn State College of Medicine has a tradition of excellence in education that is scientifically and clinically rigorous with a deep foundation in scholarship and humanistic care. Building on our experience, and benefiting from the resources that our regional campus in University Park offers, we invite you to learn in an environment that fosters inter-professional team skills, curiosity, and a commitment to the calling of medicine.

## Curriculum Highlights

### Patient-based Experiences

Early clinical immersion, integrated with active small group discussions, drives the exploration of the Four Pillars of the Penn State College of Medicine: Foundational Sciences; Clinical Sciences; Health Systems Science and Health Humanities.

### Individualized Mentoring

Our small class size allows for regular and frequent individual mentoring from core faculty as well. It also promotes longitudinal learning relationships with a diverse group of health professionals in our clinical practice and community service sites.

### Experiential Learning

The UP curriculum is designed to be experiential. Individuals learn best when connecting knowledge and skills to experience. Your learning centers around patients and health care communities you encounter, supported by colleagues, faculty, and the ample resources of the College of Medicine and Penn State.

### Community Engagement

You will engage with patients, community representatives, and health system leaders to learn and promote community-based solutions to improve healthcare outcomes.

### A Culture of Respect and Humanistic Care

Penn State College of Medicine is home to the nation's first Department of Humanities. We remain committed to developing humanistic, curious health care professionals. The UP Curriculum is designed to support and enhance the role of the Health Humanities through patient experiences, integrated small group reflection, and faculty mentorship.

## Curriculum

### Year 1

#### • Transition to Medicine I

- *Last half of July*
- This time helps you transition to University Park and build skills necessary for success in medicine.
- These first weeks are when you join the collegial ranks of the profession, and begin first steps of your on-the-job training.

#### • Patients and Sciences 1

- *Middle of July to middle of December, with November break*
- The clinical experiences in Patients and Sciences 1 engage students in meaningful, patient-centered roles within primary care practice sites. Students bring patient cases to inquiry group (IQ) sessions to co-create learning objectives around the four core Penn State College of Medicine pillars (Biomedical, Health Humanities, Health Systems and Clinical Sciences) with faculty facilitators. Students then research the learning objectives for collaborative discussion, practical application, and additional question generation through the rest of the week and beyond. Students learn history, physical exam, and presentation skills in PS1 and PS2 and practice these skills in their clinical immersion sites. In addition to the IQ groups and clinical immersions, students participate in collaborative science tutorials for deeper exploration of biomedical science concepts.

- **Patients and Sciences 2**
  - *January to June*
  - The experiences in Patients and Sciences 2 build on what is learned in Patients and Sciences 1.
- **Career Exploration/Preceptorship Week**
  - *Middle of March*
  - This week provides first-year medical students the opportunity to explore medical specialties of their choice. Students are encouraged to engage with practices either in or outside of the State College area to experience different disciplines from a more personal vantage.
- **Reflection and Assessment Weeks**
  - *End of Sept/Dec/March/May*
  - These weeks are reserved for reflection on educational goals and accomplishment and formal assessment.
- **Portfolio Development**
  - *Various times throughout first year*
  - Beginning in the first year and continuing through until graduation, students will periodically work on their learning portfolios. These are compilations of the student's performance that provide some additional qualitative evidence of developmental progression towards the competencies and sub-competencies of the medical school.
- **Scholarship/Research and Global Health**
  - *Summer, end of Year 1*
  - Students have the opportunity to do research for the Medical Student Research project and/or participate in Global Health opportunities.

## Year 2

- **Scholarship/Research and Global Health**
  - *Summer, start of Year 2*
  - As above.
- **Transition to Clerkships II**
  - *Beginning of Year 2*
  - This course focuses on successfully transitioning students from preclinical to clinical training, building on the knowledge and clinical skills covered in Phase I. It includes advanced clinical skills training through simulation as well as several fundamental medical principles from various specialties that will be expanded and reinforced in subsequent clerkships. In addition, roles and responsibilities of a second-year medical student are covered through discussions on reflection, professionalism, and communication.
- **Clerkships**
  - *August of 2nd year through July of 3rd year*
  - Required core clinical clerkships in Internal Medicine, Family and Community Medicine, Psychiatry, Health Equity, Neurology, Obstetrics and Gynecology, Pediatrics and Surgery are offered at the UP campus. Clerkships at the UP campus are conducted through a Longitudinal Integrated (LIC) model. This model allows for continuity of learners, teachers, patients and practices over the course of an entire year and provides the student an opportunity to display developmental growth over all of the core clerkships.

- **Clinically Integrated Medical Sciences ("Marsh Rounds")**
  - *Year 2, with breaks*
  - This course will focus on building an integrated sciences approach into second-year medical students' clinical training. Mastery of the processes covered by the course will enhance students' ability to think critically about complex, clinical problems through the respective lenses of biomedical sciences, systems and social sciences. This course incorporates a humanities stripe dedicated to student reflection on clinical experiences while providing a supportive environment for sharing difficulties and insights. Dr. Marsh was the Founding Dean of the University Park Regional Campus and continues to be a valued and beloved educator for the UP medical students.
- **Humanities**
  - *Year 2, with breaks*
  - Humanities coursework continues through Year 2 primarily through the use of "Kienle" small groups that are conducted most all weeks of the year. These groups are designed to directly address some of the difficult challenges that medical students encounter during their growth and professional development in this first clinical educational year. The Drs. Kienle were professors in the early years of the College of Medicine and were dedicated toward supporting the Office of Medical Humanities.
- **Health Systems in Clerkships**
  - *Year 2, with breaks*
  - Health Systems in Clerkships accompanies the Year 2 Clerkships.
- **Assessment**
  - There are seven clerkship exams during Year 2.

## Year 3

- **Patients and Sciences 4**
  - The experiences in Patients and Sciences 4 are designed to build on what is learned in Patients and Sciences 1 and 2. This return to basic science is specifically engineered to allow students deeper explorations of core foundational science elements having within a robust context of clinical experience. Roughly ½ day per week is maintained in a longitudinal clinical experience of the student's own choosing.
- **Assessment**
  - There are serial formative quizzes and two summative exams.
  - To benchmark basic science progress, the CBSE exam is delivered at the start and end of PS4.
  - Two reflective writing exercises are submitted based on the students longitudinal clinical experience and are kept for the learner portfolio.
- **USMLE Study**
  - USMLE study begins midway through the third year.
  - Students are required to take USMLE Step 1 prior to the start of the Translating Health Systems course.
  - Students will often take Step 2 CK shortly after taking USMLE Step 1. In any case, the examination must be taken prior to October 31st of the 4th year.
  - USMLE Step 2 CS must be completed by the end of Dec in the 4th year.

- **Translating Health Systems**

- Phase III includes a two-week Translating Health Systems intersession. This course is designed to help students apply concepts of patient safety, quality improvement, value, and teams to the clinical setting. It provides students with opportunities to actively identify patient safety issues and develop a quality improvement project proposal. By design, this course emphasizes teamwork, an essential component in providing quality patient care. The goal is to guide learning in these concepts so that students will have the base knowledge to help improve care of their patients and the health system in which they will work during the fourth year of medical school and in residencies.

- **Phase III: Discovery**

- Phase III includes a discovery phase which allows for board preparation and career exploration as well as acting internships.

- **Phase IV: Residency Prep**

- Phase IV includes residency preparation, interviews and two total acting internships in different clinical fields or one acting internship and one critical care rotation.

## Year 4

- **Phase IV: Residency Prep**

- *Year 4, with breaks*
- Phase IV includes residency preparation, interviews and two total acting internships in different clinical fields or one acting internship and one critical care rotation. Students also prepare for and take the USMLE Step 2 CK and CS in the earlier part of Year 4. (see above)

- **Transition to Internship**

- *Spring (Usually the 1-2 weeks immediately preceding Commencement and Graduation)*
- Transition to Internship, occurs at the end of each student's medical school career and builds on these concepts in preparation for residency training. POM III is the final requirement for each graduating fourth year medical school class, taking place just prior to medical school graduation. Its structure includes both large group workshops (involving the entire fourth-year class) and a number of small group "selective" sessions. POM III was designed with goals of providing review and practice of key clinical skills and concepts, as well as introduction of new information regarding communication and collaboration with other health professionals, teaching and evaluation strategies for interns in their educator roles, and practice in effective patient handoffs. The course also includes time for reflection on professional responsibilities, personal stressors and individual support systems.

- **Graduation**

- *May*

## Accelerated Hershey Curriculum

Penn State College of Medicine has launched a set of "3+" pathways that allow students to select a concentration of study that will enhance/accelerate their professional development.

### Option 1: Three-Year MD Accelerated Pathways

Students will complete the medical degree in three years followed by residency training at Penn State in their chosen specialties, which currently include family medicine, emergency medicine, internal medicine,

neurosurgery and orthopaedics. The benefits of the accelerated option include reduction of the cost of medical education and earlier career entry. The linkage of undergraduate and graduate medical education optimizes opportunities for continuity of patient care, mentoring and advising.

### Option 2: Clinician Scientist and Clinician Educator Pathways

These pathways allows students to achieve school-wide competencies and complete the core graduation requirements in three years while devoting the fourth year of medical school to either research (Clinician Scientist Pathway) or a Master of Education degree (Clinician Educator Pathway).

MORE INFORMATION ABOUT THE ACCELERATED HERSHEY CURRICULUM (<http://med.psu.edu/md/accelerated/>)

## Curriculum

### Year 1

- **Profession of Medicine I**

- *Two weeks in the middle of July*

- This course, the first you will attend at Penn State College of Medicine, is designed to help you make the transition to medical education and training and to begin to build some of the skills necessary for success in medical school and a career in medicine. The transition to medical school is a very important time in the life of every doctor. No longer are you in college or a master's program, striving for high grades as an end in and of themselves, or as a ticket to gaining admission to medical school. These first weeks mark that time when you join the collegial ranks of the profession, and medical school represents the first step of on-the-job training. Profession of Medicine continues throughout your medical school curriculum as you transition into clinical rotations and prepare for residency.

- **Medical Humanities**

- *Beginning of August to first week in November*

- Medical Humanities includes topics such as empathy, suffering and resilience, and the cultures of medicine and medical education.

- **The Science of Mind-Body**

- *December to end of February, with break*

- The Science of Mind-Body explores topics such as placebos, learned helplessness, behavior change and groupthink.

- **Critical Thinking**

- *March to end of April, with break*

- Critical Thinking takes up topics such as metacognition, cognitive errors and biases, intuitive versus analytic thinking, and medical decision-making in the face of uncertainty.

- **Science of Health Systems**

- *August through May, with breaks*

- This 17-month longitudinal course spans the full medical school experience with the main focus in Phases 1 and 2. In this new health systems component, students will experience a new Science of Health Systems curriculum, where they will learn the foundations of health systems, health care delivery, financing, insurance, population and public health, socio-ecological medicine, quality, safety, value, and teamwork and leadership. Additionally, students will serve as patient navigators within

the health system. Both the curriculum and patient navigator experience will allow students to develop the knowledge, skills, and attitudes to function effectively amid the complexities of an evolving health system.

- **Foundations of Patient-Centered Care**

- *Middle of July to next June, with breaks*
- This course, which spans the first 19 months of medical school training at Penn State College of Medicine, is administered within each student's respective Society and is integrated with other first- and second-year courses. The course consists of three components: communication/clinical interviewing, physical examination, and integration, application and advancement teaching sessions.

- **Scientific Principles of Medicine**

- *End of July through October*
- This course is offered as part of the Hershey track.

- **Anatomy**

- *End of October to beginning of June, with breaks*
- Anatomy is taught through a series of block systems courses throughout Year 1: Musculoskeletal System, Hematology, Cardio-Respiratory Medicine and Renal Medicine.

- **Musculoskeletal System, Dermatology and Rheumatology**

- *End of October to middle of December (with break)*
- This course has three major components. The first is dedicated to orthopedics, the second to rheumatology, and the third to dermatology. The course integrates dermatology, immunology, family medicine (sports medicine), internal medicine (rheumatology), orthopedics, pathology, and pediatrics (rheumatology). The subject matter is linked as joint disease connects orthopedics and rheumatology and, immunology connects rheumatology and dermatology. The lecture content and problem-based learning cases will help to illustrate the "connectedness" of this block of material.

- **Hematology**

- *End of December to middle of January, with break*
- The goal of the hematology course is to provide students with an introduction to the pathophysiology, clinical manifestations, and the principles of treatment of diseases of the blood and blood-forming organs.

- **Cardio-Respiratory Medicine**

- *Middle of January to beginning of April*
- The Cardio-Respiratory course is the students' first intensive exposure to integrative physiology. Cardio-Respiratory Medicine requires mastery of cardiovascular and respiratory physiology, anatomy, embryology, histology, pathology, immunology and pharmacology, as well as the clinical science underlying cardiovascular and respiratory disease. Lectures and problem-based learning cases are augmented by hands-on EKG sessions, training in the techniques of cardiac physical examination, workshops, lung and heart sounds simulations and a ventilation simulation laboratory. Cardiovascular disease remains a leading killer of Americans and lung disease is prevalent; knowledge gained here will be useful throughout your entire medical career.

- **Renal Medicine**

- *End of April through May*
- The course provides an introduction to the physiology, anatomy, pharmacology, microbiology, and pathology of the kidneys and urinary tract. Topics include the relationship between structure and function of urinary system; fluid, electrolyte and acid/base homeostasis in health and disease; etiology and manifestations of common diseases of the kidneys; and cellular processes that mediate the actions of pharmacological agents active in the urinary system.

- **Clinical Skills Immersion**

- *Second week in April*
- This is a week of clinical skills immersion.

- **Primary Care Preceptorship**

- *One week in April*
- The Primary Care Preceptorship is an optional experience during spring break that provides an opportunity for first-year medical students to participate in an organized educational experience with physicians who are board certified in the specialties of family medicine, internal medicine, and/or pediatrics. This course is scheduled for one week and requires each student to complete 40 hours within the ambulatory care setting of his/her designated preceptor. All clinical training sites are reviewed to ensure the learning environment can provide students with the opportunity to achieve defined learning objectives and the physicians who teach are up-to-date on board certifications. The course offers a clinical experience early in the students' medical education and exposure to the fundamentals of patient care within the emerging models of health care in the 21st century. Students are offered clinical training experiences within the setting of the Commonwealth of PA, participating practices nationally, and an international track in affiliation with Global Brigades.

- **Reflection and Assessment**

- *First week in June*
- This is a week of reflection and assessment.

- **Acceleration Clerkships/Electives**

- *Middle of March through end of Year 2*
- This is the time when you will be accelerating your education to allow you to finish in 3 years.

## Year 2

- **Scholarship/Research and Global Health**

- *Summer, start of Year 2*
- Over the summer, students have the opportunity to do research for the Medical Student Research project and/or participate in Global Health opportunities.

- **Medical Ethics and Professionalism**

- *Middle of August through October*
- Medical Ethics and Professionalism provides students with a framework for decision making in the face of common ethical challenges and addresses issues involving autonomy, informed consent, advance care planning, medical mistakes and truth-telling.

- **Science of Health Systems**

- *Middle of August to early February of following year, with breaks*
- This 17-month longitudinal course spans the full medical school experience with the main focus in Phases 1 and 2. In this new health systems component, students will experience a new Science of Health Systems curriculum, where they will learn the foundations of health systems, health care delivery, financing, insurance, population and public health, socio-ecological medicine, quality, safety, value, and teamwork and leadership. Additionally, students will serve as patient navigators within the health system. Both the curriculum and patient navigator experience will allow students to develop the knowledge, skills, and attitudes to function effectively amid the complexities of an evolving health system.

- **Foundations of Patient-Centered Care**

- *Middle of August through January, with breaks*
- This course, which spans the first 19 months of medical school training at Penn State College of Medicine, is administered within each student's respective Society and is integrated with other first- and second-year courses. The course consists of three components: communication/clinical interviewing, physical examination, and integration, application and advancement teaching sessions.

- **Gastrointestinal and Nutrition**

- *Middle of August to third week in September*
- This course provides exposure to the foundational basic science and advanced concepts necessary to understand the approaches used to diagnose, treat and manage disorders of nutrition, the oropharynx, esophagus, stomach, small and large bowel, pancreas, biliary system and liver. Foundational material will include integrative physiology of these organs. The students will develop the ability to differentially diagnose, describe treatments, and review management of nutritional disorders and support as well as diseases of the GI organs and liver. The pathogenesis, pathology, differential diagnosis, clinical course, and complications of GI and liver diseases will be covered along with aspects of clinical management, especially the pharmacology of drugs used to treat them. The course will augment large-group classroom learning opportunities with problem-based learning, wet laboratory and simulation laboratory experiences.

- **Endocrinology and Reproductive Medicine**

- *Last week of September through middle of November*
- The goal of this course is to learn about the general principles, physiology actions, causes and consequences of insufficiency or excess chemical messengers that function as hormones. These principles are then incorporated into the anatomy, histology and physiology of the female and male reproductive system, including pregnancy. Basic disease processes and therapeutics, including pharmacology, are also covered.

- **Neural and Behavioral Science**

- *End of November to middle of February, with break*
- NBS incorporates basic neuroanatomy, neurophysiology, neurology, neuropathology, neuropharmacology, anesthesia, ophthalmology, radiology, behavioral science, and psychiatry. The goal is for students to understand the structure of the human nervous system, the biological mechanisms that underlie the functions of the nervous system, the neural basis of behavior,

and the diagnosis, pathology and treatment of diseases that affect the nervous system by incorporating these topics with clinical relevance. The course also includes pathology wet labs and Neurology Day, where students interact in small groups with 14 patients who have various neurological disorders.

- **Communication**

- *Early November to middle of February, with break*
- Communication focuses on exploring assumptions and biases that impact communication and communicating in dyads, teams, and larger systems.

- **Profession of Medicine II**

- *Last two weeks of February; Third week in April*
- This course focuses on successfully transitioning students from preclinical to clinical training, building on the knowledge and clinical skills covered in Phase I. It includes advanced clinical skills training through simulation as well as several fundamental medical principles from various specialties that will be expanded and reinforced in subsequent clerkships. In addition, roles and responsibilities of a third-year medical student are covered through discussions on reflection, professionalism, and communication.

- **Health Systems in Clerkships**

- *March through end of Year 2*
- Health Systems in Clerkships accompanies the Year 2 Clerkships.

- **Clerkships**

- *Beginning of March through end of next March*
- Required core clinical clerkships begin toward the end of Year 2. Clerkships are taught in three blocks. See clerkship details here (<https://students.med.psu.edu/md-students/clerkships/>).
  - Block 1 clerkships are May to August.
  - Block 2 clerkships are August through third week of November.
  - Block 3 clerkships are end of November through March.

- **Career Exploration and Synthesis**

- *Three weeks over end of July/beginning of August*
- This is a week and a half Career Exploration and Synthesis session.

- **Clinically Integrated Medical Sciences**

- *Middle of May to middle of March, next year*
- This course will focus on building an integrated sciences approach into third-year medical students' clinical training. Mastery of the processes covered by the course will enhance students' ability to think critically about complex, clinical problems through the respective lenses of biomedical sciences, systems and social sciences. This course incorporates a humanities stripe dedicated to student reflection on clinical experiences while providing a supportive environment for sharing difficulties and insights.

- **Assessment Week**

- *Second week in August*
- This is a reflection and assessment week at the end of Year 2.

### Year 3

- **Clerkships**
  - *Middle of March*
  - Required core clinical clerkships begin toward the end of Year 2 and continue in Year 3. Clerkships are taught in three blocks. See clerkship details here (<https://students.med.psu.edu/md-students/clerkships/>).
    - Block 1 clerkships are May through the first two weeks of August.
    - Block 2 clerkships are August through most of November.
    - Block 3 clerkships are the end of November to the last week of March.
- **Career Exploration and Synthesis**
  - *End of July, beginning of August*
  - This is a week and a half Career Exploration and Synthesis session.
- **Clinically Integrated Medical Sciences**
  - *Middle of May through middle of March, next year, with breaks*
  - This course will focus on building an integrated sciences approach into third-year medical students' clinical training. Mastery of the processes covered by the course will enhance students' ability to think critically about complex, clinical problems through the respective lenses of biomedical sciences, systems and social sciences. This course incorporates a humanities stripe dedicated to student reflection on clinical experiences while providing a supportive environment for sharing difficulties and insights.
- **Acceleration Clerkships/Electives**
  - *August through end of Year 2*
  - This is the time when you will be accelerating your education to allow you to finish in 3 years.
- **Kienle Groups**
  - *Year 3, with breaks*
  - The Kienle Group curriculum is part of a broader Humanities stripe across the entire Penn State curriculum and provides an opportunity for students to talk candidly about their personal challenges and perspectives as they move through their clinical clerkships. The sessions take place on designated Fridays during the course of the Clerkship year.
- **Health Systems in Clerkships**
  - *Beginning of March through end of Year 3 clerkships*
  - Health Systems in Clerkships accompanies the Year 3 Clerkships.
- **Assessment Week**
  - *Second week in August; Third week in November*
  - These are reflection and assessment weeks during Year 3.
- **Formative OSCE**
  - *Second week in November*
  - Students take formative and summative OSCEs prior to starting Phase III.
- **Career Exploration and Synthesis**
  - *July/August; Early November; Middle of March*
  - These are week-and-a-half Career Exploration and Synthesis sessions.
- **USMLE Study**
  - *January to March*
  - USMLE study begins midway through the third year.
- **Translating Health Systems**
  - *End of March*
  - Phase III begins with a two-week Translating Health Systems intersession. This course is designed to help students apply concepts of patient safety, quality improvement, value, and teams to the clinical setting. It provides students with opportunities to actively identify patient safety issues and develop a quality improvement project proposal. By design, this course emphasizes teamwork, an essential component in providing quality patient care. The goal is to guide learning in these concepts so that students will have the base knowledge to help improve care of their patients and the health system in which they will work during the fourth year of medical school and in residencies.
- **Residency Prep**
  - Phase IV includes residency preparation, interviews and two total acting internships in different clinical fields or one acting internship and one critical care rotation. Additional requirements include one humanities selective, completing six total electives (to include electives from Phase II and Phase III), and the Profession of Medicine III course (Transition to Internship). All graduation requirements are confirmed to be completed during this time. The College of Medicine offers a variety of clinical, teaching and research electives for students during this phase.
- **USMLE**
  - *End of January through beginning of May*
  - Students prepare for and take USMLE Step 1, Step 2 CS and Step CK before the end of Year 3.

## Competencies and Subcompetencies for Graduation

1. Patient Care: Provide patient-centered care that is compassionate, appropriate, and effective for the promotion of health and treatment of health problems
  - **PC 1.1.** Perform a problem-focused and complete history and physical examination
  - **PC 1.2.** Use clinical information to formulate differential diagnosis; identify and interpret clinical and diagnostic test information to formulate a prioritized differential diagnosis and management plan
2. Knowledge for Practice: Demonstrate knowledge of established and evolving biomedical, clinical, and healthcare delivery sciences, as well as the application of this knowledge to patient care
  - **KP 2.1.** Demonstrate knowledge of the biomedical and clinical sciences and apply this knowledge to diagnostic and therapeutic decision-making and clinical problem-solving
  - **KP 2.2.** Contribute to the creation, dissemination, application, and translation of knowledge and practices
3. Practice-Based Learning and Improvement: Demonstrate the ability to investigate and evaluate one's care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care
  - **PBLI3.1/PPD 8.1.** Incorporate reflection and self-assessment in the development of one's own professional identity, systematically analyze one's own performance to identify

- strengths and challenges, set individual learning and improvement goals, and engage in appropriate learning activities to meet those goals.
- **PBLI 3.2.** Identify one's own knowledge gaps as they emerge in patient care activities, formulate an appropriate question to address the gap, utilize clinical informatics to locate, appraise, and assimilate evidence to inform patient care
4. Interpersonal and Communication Skills: Demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals
    - **ICS 4.1.** Communicate effectively with patients, families, and other individuals across a broad range of backgrounds, beliefs, and identity
    - **ICS 4.2.** Demonstrate the ability to document and organize patient information both orally and in the medical record
    - **ICS4.3/IPC7.3.** Communicate effectively with others on an interprofessional team
  5. Professionalism: Demonstrate a commitment to behaving in a professional manner and adhering to ethical principles
    - **Prof 5.1.** Act in the best interest of individual patients and patient populations
    - **Prof 5.2/MH9.3.** Act with honesty, integrity, accountability, and reliability, adhering to ethical norms and principles for the practice of medicine
  6. Systems-Based Practice: Demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care
    - **SBP 6.1.** Demonstrate knowledge of the basic principles of healthcare delivery, organization and finance
    - **SBP 6.2.** Incorporate considerations of value-based care in decisions about patients and/or populations
    - **SBP 6.3.** Identify and analyze adverse events, medical errors, and systems issues and propose interventions that will improve the value of healthcare
    - **SBP 6.4.** Analyze factors that affect the health outcomes of patients, populations, and communities
  7. Interprofessional Collaboration: Demonstrate the ability to engage in an interprofessional team in a manner that optimizes safe, effective patient- and population-centered care
    - **IPC 7.1.** Apply principles of team dynamics in interactions with other health professionals, patients, and families, in the context of shared knowledge, shared goals, and mutual respect
    - **IPC 7.2.** Use the knowledge of one's own roles and responsibilities and those of other health professionals – to optimize health care
    - **IPC 7.3/ICS4.3.** Communicate effectively with others on an interprofessional team
  8. Personal and Professional Development: Demonstrate the qualities required to sustain lifelong personal and professional growth
    - **PPD 8.1/PBLI3.1.** Incorporate reflection and self-assessment in the development of one's own professional identity, systematically analyze one's own performance to identify strengths and challenges, set individual learning and improvement goals, and engage in appropriate learning activities to meet those goals
    - **PPD 8.2.** Manage the balance between personal and professional expectations
      - **PPD 8.3.** Articulate potential rewards and challenges of future phases of one's own career
  9. Medical Humanities: Demonstrate respect for the diverse values, beliefs and practices one encounters in the field of healthcare, while embodying a commitment to becoming an ethical, reflective, humble, informed, and compassionate physician
    - **MH 9.1.** Demonstrate compassion, humility, and respect toward all persons regardless of their diverse identities, values, beliefs, and experiences.
    - **MH 9.2.** Demonstrate the application of humanities and/or the arts to illuminate the lived experience of illness and to enhance the care of the patient
    - **MH 9.3/Prof 5.2.** Act with honesty, integrity, accountability, and reliability, adhering to ethical norms and principles for the practice of medicine
  10. Critical Thinking: Apply higher-order cognitive skills and deliberate thinking that leads to action that is context appropriate
    - **CT 10.1.** Demonstrate skepticism, curiosity, and a willingness to acknowledge uncertainty when confronted with new information or situations
    - **CT 10.2.** Demonstrate mindful interrogation of one's own thinking process and biases in making decisions

Adapted from: Englander R, Cameron T, Ballard AJ, Dodge J, Bull J, Aschenbrener CA. Toward a common taxonomy of competency domains for the health professions and competencies for physicians. *Acad Med.* 2013; 88(8):1088-94.

## Tuition and Financial Aid

The Office of Student Aid at the College of Medicine is here to assist you. We can help you understand your options, apply for financial assistance and make well-informed choices about financing your education.

### Contact Us

If you have questions about financial aid, please contact the Office of Student Aid at 717-531-7052 or [StudentAid@pennstatehealth.psu.edu](mailto:StudentAid@pennstatehealth.psu.edu).

### Applying for Financial Aid

Most students in the MD program rely on financial aid to help pay for their education and housing expenses. In 2016-17, 87.6% of our students received some form of financial aid.

Sources of aid include:

- **Loans:** These include need-based university loans awarded by the Office of Student Aid and federal loans (Direct Unsubsidized and GradPlus).
- **Scholarships:** These include both merit- and need-based university scholarships awarded by the Office of Student Aid.

LEARN HOW TO APPLY FOR FINANCIAL AID (<http://students.med.psu.edu/md-students/financial-aid/>)

### Cost of Attendance

The annual Cost of Attendance is not finalized until the University Board of Trustees establishes tuition charges at their annual July meeting. This website provides cost of attendance information for the current academic year. This information will be updated annually after tuition charges are established each July.



The cost of attendance is based upon educational expenses and modest, but adequate living expenses for the student.

## Tuition

Tuition in the MD program is the same for Pennsylvania and non-Pennsylvania residents.

Living expenses are approximately the same for on- and off-campus residents.

Tuition and fees are based on actual costs for the 2017-2018 academic year. Tuition fees are subject to change based on approval from the Penn State Board of Trustees.

USMLE costs were estimated at the time the costs were determined. Changes in curriculum can alter the academic year in which a student will incur these costs.

Disability insurance is required and the amount is based on the actual 2017-18 academic year.

Registered students are required to carry medical insurance. This can be purchased through the university for \$3,622 for first-year students, or \$3,418 for second- through fourth-year students for 2017-18. Students have the option to purchase medical insurance on their own as long as it meets university requirements.

## Accreditation

The Penn State College of Medicine's MD Program is fully accredited by the Liaison Committee on Medical Education (LCME) (<http://www.lcme.org/>), the national accreditation authority for medical education programs leading to the MD degree in the United States and Canada.

LCME accreditation is a peer-reviewed process of quality assurance that determines whether the medical education program meets established standards. To achieve and maintain accreditation, a program leading to the MD degree in the United States and Canada must meet the LCME accreditation standards. Accreditation status is reviewed by a team of site visitors every eight years. The next review date for the College of Medicine is the 2025-2026 academic year.

## Professional Licensure/Certification

Many U.S. states and territories require professional licensure/certification to be employed. If you plan to pursue employment in a licensed profession after completing this program, please visit the Professional Licensure/Certification Disclosures by State (<https://psu.edu/state-licensure-disclosures/>) interactive map.

## Contact

### MD Program

Penn State College of Medicine  
500 University Drive  
Hershey, PA 17033

717-531-8755

[StudentAdmissions@pennstatehealth.psu.edu](mailto:StudentAdmissions@pennstatehealth.psu.edu)

# Physician Assistant Program

## Overview

The Penn State Physician Assistant (PA) Program, located at the Penn State College of Medicine campus in Hershey, PA, is a 24-month, full-time graduate program enrolling 30 students each May.

Our first class graduated in May 2016.

Consistent with the goals of the entire College of Medicine, the PA Program emphasizes humanism in medicine, which takes into account the dedication required for individualized and personalized medicine.

## Mission & Goals

The Physician Assistant Program's mission is to prepare graduates to be academically, clinically, professionally and culturally competent in the delivery of health care services, to develop critical thinking and application skills, and to provide compassionate and comprehensive care to the patients they will serve. Our graduates will improve the health of their patients and the populations they serve in an efficient and cost-conscious manner.

We believe that the Penn State PA program will prepare its graduates for modern medical practice and that these graduates will be supremely prepared for their role as clinicians. The goals of our program are:

- To attract an academically qualified, diverse student body with special consideration for veterans and those from economically or educationally disadvantaged backgrounds (see progress toward this goal (<http://med.psu.edu/physician-assistant/goals/#goal1>))
- To promote application of learning and development of critical thinking skills (see progress toward this goal (<http://med.psu.edu/physician-assistant/goals/#goal2>))
- To enable graduates to practice competent and compassionate health care with emphasis in primary care (see progress toward this goal (<http://med.psu.edu/physician-assistant/goals/#goal3>))
- To prepare students for their role as clinicians, professionals, educators, and leaders in the physician assistant profession (see progress toward this goal (<http://med.psu.edu/physician-assistant/goals/#goal3>))
- To treat the entire patient with cultural competency, addressing physical, medical, psychosocial, and emotional dimensions of the patient (see progress toward this goal (<http://med.psu.edu/physician-assistant/goals/#goal4>))

## Prerequisites

### PA Program Prerequisites

Applicants will need to complete an undergraduate bachelor's degree (or equivalent) prior to matriculation into the PA Program.

We prefer that your major be in the health sciences, but this is not a mandatory requirement for application or admission. For admissions consideration, an applicant should ordinarily have:

- A CASPA-calculated overall cumulative GPA of at least 3.0
- A CASPA-calculated overall science GPA of at least 3.0

### Detailed Prerequisites

We require several course prerequisites for admission consideration, although completion of this coursework is not required until the time

of matriculation. Applicants can submit their CASPA and secondary applications with courses in progress or planned.

A minimum of one semester is required and science labs are strongly encouraged to supplement any science course lecture component.

Prerequisite courses are:

- General biology
- Anatomy and physiology – two semesters (or one semester each)
- Microbiology
- General or principles of chemistry
- Biochemistry or organic chemistry
- General psychology
- Statistics or bio statistics
- Two semesters of English composition (or two courses listed as writing intensive courses)

We offer conditional admission in the event that a course(s) or hours are outstanding at the time a candidate interviews with the program.

### AP and CLEP Credit

AP credit that was accepted by your undergraduate institution can satisfy a number of our prerequisites including general biology, general chemistry, psychology, statistics, and English composition courses. You can also use CLEP credit to satisfy course prerequisites.

### Hours

Each prerequisite can be satisfied by one full semester, typically 3 to 4 semester-hours. For applicants on a trimester schedule, five-to-six quarter hours at minimum satisfy a prerequisite.

Keep in mind that requirements to graduate with a bachelor's degree versus requirements for admission to Penn State's PA program will undoubtedly vary. For instance, completion of General Chemistry I can satisfy our prerequisite but often General Chemistry I and II are required to enroll in Organic Chemistry I at most institutions.

### Online Courses

We accept online courses from regionally accredited institutions.

### Currency and Exceptions

Three prerequisites have a five-year currency. They are:

- Anatomy (or A&P I)
- Physiology (or A&P II)
- Microbiology

This currency requirement will be waived for any applicant who has been working full time and continuously in the healthcare field since completing the coursework.

### English Composition Courses

Any course that the institution deems as having satisfied a "writing intensive" will suffice. The course can be in any major and does not need to be an English-major based course. Additionally, if completion of a bachelor's degree incorporates writing across the curriculum, please share this information with the admissions committee.

### Healthcare Experience

For admission consideration, a candidate should have 500 hours of health care experience (paid or volunteer). These hours can be in progress or planned during the application cycle, and you can update the program directly to add hours accrued after initial submission of the

CASPA and secondary application. Hours must be completed by the time a candidate would matriculate into the program.

While our program is flexible in accepting a wide variety of hours to help satisfy the 500-hour requirement, hours as a personal trainer or lifeguard are unacceptable.

### Technical Standards

The technical standards for Penn State College of Medicine's Physician Assistant Program have been established to ensure that students have the ability to demonstrate academic mastery, competence when performing clinical skills, and ability to communicate clinical information.

LEARN MORE ABOUT OUR TECHNICAL STANDARDS (<https://students.med.psu.edu/physician-assistant-student-information/technical-standards/>)

## How to Apply

Penn State College of Medicine's Physician Assistant Program uses Central Application Service for Physician Assistants (CASPA) (<https://caspa.liasoncas.com/applicant-ux/#/login>) and adheres to CASPA's Admissions Code of Conduct.

Before beginning your CASPA application, please review the program admissions requirements. All verified CASPA applicants will receive, and must submit, a Penn State Physician Assistant secondary application to receive full admissions consideration. There is no application fee to complete your PSU PA secondary application.

## What are the Application Requirements?

A number of prerequisites apply to students seeking to join the PA Program. Be sure to read the detailed prerequisites before beginning your application. (<http://med.psu.edu/physician-assistant/prerequisites/>)

CASPA applications must include the following items to be eligible for consideration. Incomplete applications will not be considered.

- **Completed online application**
- **Official transcripts** from all post-secondary institutions attended
- **Standardized Exam Scores:** GRE school code 0900
- **Personal/biographic information**
- **Academic history**
- **Three letters of recommendation**
- **Experiences** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/Filling\\_Out\\_Your\\_CASPA\\_Application/3\\_CASPA\\_Supporting\\_Information/2\\_Experiences/](https://help.liasonedu.com/CASPA_Applicant_Help_Center/Filling_Out_Your_CASPA_Application/3_CASPA_Supporting_Information/2_Experiences/)))
- **Achievements and certifications** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/Eilling\\_Out\\_Your\\_CASPA\\_Application/3\\_CASPA\\_Supporting\\_Information/3\\_Achievements/](https://help.liasonedu.com/CASPA_Applicant_Help_Center/Eilling_Out_Your_CASPA_Application/3_CASPA_Supporting_Information/3_Achievements/)))
- **Essay** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/Filling\\_Out\\_Your\\_CASPA\\_Application/3\\_CASPA\\_Supporting\\_Information/5\\_Essay/](https://help.liasonedu.com/CASPA_Applicant_Help_Center/Filling_Out_Your_CASPA_Application/3_CASPA_Supporting_Information/5_Essay/)))
- **Release statement** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/Eilling\\_Out\\_Your\\_CASPA\\_Application/1\\_CASPA\\_Personal\\_Information/01\\_CASPA\\_Release\\_Statement](https://help.liasonedu.com/CASPA_Applicant_Help_Center/Eilling_Out_Your_CASPA_Application/1_CASPA_Personal_Information/01_CASPA_Release_Statement)))
- **Professional Code of Conduct** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/Starting\\_Your\\_CASPA\\_Application/Getting\\_Started\\_with\\_Your\\_CASPA\\_Application/4\\_CASPA\\_Professional\\_Code\\_of\\_Conduct](https://help.liasonedu.com/CASPA_Applicant_Help_Center/Starting_Your_CASPA_Application/Getting_Started_with_Your_CASPA_Application/4_CASPA_Professional_Code_of_Conduct)))
- **Admissions Code of Cooperation** (see details on CASPA ([https://help.liasonedu.com/CASPA\\_Applicant\\_Help\\_Center/](https://help.liasonedu.com/CASPA_Applicant_Help_Center/)))

Starting\_Your\_CASPA\_Application/Getting\_Started\_with\_Your\_CASPA\_Application/5\_CASPA\_Admissions\_Code\_of\_Cooperation)

## Secondary Applications

Penn State requires each applicant to submit a secondary application to receive full consideration by the admissions committee. The secondary application primarily consists of short essay responses.

All CASPA-verified applicants will receive the request to complete the secondary application. You'll receive this request via email. There is no application fee to submit the secondary application.

## Preference Factors

In accordance with the PA Program's mission and goals, special consideration for admission is given to applicants who are veterans, who are from underrepresented populations or who are from economically or educationally disadvantaged backgrounds.

Additionally, special consideration for admission is given to those applicants who have graduated from or will be graduating from Penn State University.

## Early Assurance

The Penn State PA Program has early assurance programs with the following institutions:

- Elizabethtown College
- Franklin and Marshall College
- Lebanon Valley College

Students at these institutions should speak directly with their pre-med pre-health adviser to discuss requirements and eligibility. The Early Assurance program allows students to apply to the PA Program during the junior year of undergraduate. Early Assurance applicants have the opportunity to be granted admission at the completion of the Early Assurance process, forgoing the entire CASPA application process as a senior. Information regarding this program is available on request.

## Key Dates

- **Dec. 18:** Date by which you are strongly encouraged to complete your CASPA application, which allows sufficient time for CASPA processing.
- **Jan. 15:** Firm deadline by which your primary application must be CASPA-verified to be considered for a May start in the program
- **Jan. 30:** Firm deadline by which your secondary application must be completed.
- **End of May:** Start of two-year PA Program.

## Standardized Testing Requirements

We require completion of the Graduate Record Examination (GRE) for admission to our PA Program.

Alternately, if you have previously tested on any exam listed, you may provide these scores in lieu of completing the GRE:

- MCAT total score of at least 29 or higher (old version) or 505 (new version)
- PCAT total score 75th percentile rank or higher
- DAT total score of 18 or higher

Penn State's PA Program GRE Code is **0900**. Official GRE scores are uploaded directly to CASPA.

If it has been more than five years since you took the GRE, and the Educational Testing Service no longer has record of your score, we will accept a student copy of your GRE results. You must upload this document into the CASPA-Penn State Program Materials-Document tab. If you no longer have a student copy, you will need to retake the GRE.

**International students** for whom English is not the native language must also submit TOEFL/IELTS scores with their application. The Penn State University School Code is **2660**. International applicants are exempt from the TOEFL/IELTS requirement if they have received a baccalaureate or graduate degree in one of the following countries: Australia, Belize, British Caribbean and British West Indies, Canada (excluding Quebec), England, Guyana, Republic of Ireland, Liberia, New Zealand, Northern Ireland, Scotland, the United States or Wales.

Minimum acceptable scores for the TOEFL are 550 (paper-based), 213 (computer-based) or 80 (internet-based, with at least a 19 on speaking section). The IELTS exam minimum accepted composite score is 6.5.

## Interview

We will invite the most qualified applicants to the Penn State College of Medicine campus in Hershey, PA, for an in-person interview so we can get to know you better, and you can learn more about our PA Program. Penn State hosts more than 20 interview days throughout the entire admissions cycle.

The Candidate Interview Day consists of the following activities:

- Faculty one-on-one interviews
- Real (not standardized) patient interview
- Timed writing sample
- Program presentation
- Lunch with current students
- Campus tour
- Participation in Team-Based Learning class

## Equal Opportunity, Non-Discrimination and Campus Safety

Penn State College of Medicine is an equal-opportunity employer and accepts all qualified applications regardless of their gender, ethnic origin or religious background.

The College of Medicine is also committed to fostering an environment free from discrimination and harassment. Learn more about non-discrimination (<http://med.psu.edu/non-discrimination/>).

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act and Pennsylvania Act of 1988 require that crime statistics for Pennsylvania colleges and universities be made available to applicants upon request. Learn more about campus safety and security (<http://med.psu.edu/safety/>).

## Contact Us

If you have questions about the PA Program, please contact us at 717-531-0003, ext. 285595 or [PSUPAProgram@pennstatehealth.psu.edu](mailto:PSUPAProgram@pennstatehealth.psu.edu) ([psupaprogram@pennstatehealth.psu.edu](mailto:psupaprogram@pennstatehealth.psu.edu)).

## Curriculum

### Graduation Requirements

Graduation requirements for PA students include:

- Satisfactorily completing all requirements in the specified curriculum and in good academic standing
- Attainment of good professional standing
- Enrollment in the program for the time period specified by the professional accrediting body, if applicable
- Successful passage of a summative experience and final evaluation
- Recommendation for graduation by the faculty of the specific program and the general faculty
- Satisfaction of all financial obligations to Pennsylvania State University College of Medicine
- Follow the approved course of study, satisfactorily completing all courses within the professional component
- Complete all courses with a cumulative 3.00 average, with no course or rotation below a "C"; a "C-" grade in any course or rotation does not meet this standard. For courses that are administered on a pass/fail basis, the student must achieve a "pass" for the course
- Repeat, as approved, and earn a minimum grade of "C" for any required course or rotation in the professional phase for which a grade of "C-" or below was earned

The PA Program requires 101 credits for successful program completion. The program curriculum contains a senior summative, one-credit course that also must be successfully completed in order to meet the program requirements for graduation eligibility.

All courses offered in the curriculum are required, and all of these courses must be successfully completed (as detailed above) to meet this eligibility for graduation.

### Advanced Placement Policy

The program will not count coursework completed at a previous institution as fulfilling any of the requirements to graduate. If a student requests special exemption to this policy, it will be denied.

### Work & Attendance Policy

The Penn State PA Program will not prohibit students in the program from working. The program believes each student is the correct person to make personal decisions regarding his or her life outside the program. The program is cognizant that students have made a number of personal sacrifices to matriculate into a PA program and are aware of the challenges of succeeding in a PA program. To this end, the program respects the student's personal decision regarding work. The program generally does not have mandatory attendance policy for classes – we would like you to attend class because we feel the teachers will be excellent classroom facilitators and instructors, but we respect different learning styles and the student's decision on how to best assure their success. Each course will provide information regarding attendance policy, though student are required to attend all scheduled tests. Though the program does not prohibit outside employment during the pre-clinical or clinical training, we do not encourage working because of the demands and dedication required for PA training. Students attending clinical rotations will have a minimum of 40 hours a week at the clinical site, which may involve different shifts and weekends – which would make employment very difficult. Students are expected to conform to the

schedule that individual preceptor makes, as preceptors will not alter the schedule to accommodate a student's work schedule.

### Course Timeline

You'll need 101 credits total to complete our program: 55 credits in the pre-clinical year and 46 credits in the clinical year, as described below.

All courses in the curriculum are graded on a letter grade basis with the exception of the Advanced Cardiac Life Support Course, the Health Care Ethics Course, and the Evidence-Based Medicine Course in the pre-clinical curriculum. These are Pass/Fail courses.

#### Pre-Clinical Year: Summer

Code	Title	Credits
PAS 701	Applied Human Structure and Function I	2
PAS 702	Applied Human Structure and Function II	2
PAS 704	Clinical Medicine I	5
PAS 707	Pathophysiology I	2
PAS 710	Pharmacology I	2
PAS 713	Pharmacotherapeutics I	1
PAS 716	History and Physical Examination I	2
PAS 721	US Health Care System/Legal Medicine	1
PAS 724	Laboratory Interpretive Methods	1
<b>Total Credits</b>		<b>18</b>

#### Pre-Clinical Year: Fall

Code	Title	Credits
PAS 703	Applied Human Structure and Function III	2
PAS 705	Clinical Medicine II	5
PAS 708	Pathophysiology II	2
PAS 711	Pharmacology II	2
PAS 714	Pharmacotherapeutics II	1
PAS 717	History and Physical Examination II	2
PAS 719	Evidence-Based Medicine	1
PAS 723	Behavioral Medicine	1
PAS 725	Physician Assistant Professional Practice	1
PAS 728	EKG Interpretive Methods	1
PAS 730	Medical Ethics	1
PAS 731	Radiology Interpretive Methods	1
<b>Total Credits</b>		<b>20</b>

#### Pre-Clinical Year: Spring

Code	Title	Credits
PAS 706	Clinical Medicine III	5
PAS 709	Pathophysiology III	2
PAS 712	Pharmacology III	2
PAS 715	Pharmacotherapeutics III	1
PAS 718	History and Physical Examination III	2
PAS 720	Pediatric Studies	1
PAS 722	Women's Health Studies	1
PAS 726	Advanced Cardiac Life Support	1
PAS 727	Clinical Skills	1
PAS 729	Emergency Studies	1
<b>Total Credits</b>		<b>17</b>

## Clinical Year

During the clinical year, students will take three mandatory primary-care rotations in the area of family practice and internal medicine. Each rotation lasts five weeks.

### Mandatory Rotations

Code	Title	Credits
PAS 732	Emergency Medicine Rotation I	5
PAS 734	Family Medicine Rotation I	5
PAS 737	General Surgery Rotation I	5
PAS 739	Internal Medicine Rotation I	5
PAS 741	Mental Health Rotation I	5
PAS 743	Pediatrics I	5
PAS 745	Women's Health I	5
PAS 747/748	Internal Medicine III Rotation	5
One Elective Rotation (See Below)		5
PAS 756	Summative Experience <sup>1</sup>	1
<b>Total Credits</b>		<b>46</b>

<sup>1</sup> Upon completion of the clinical training, students will participate in a one-credit Summative Experience. In addition to taking the PACKRAT examination (which does not impact student placement in the PA Program), students will participate in assessments for knowledge, technical skills, interpretation, and performance of diagnostic evaluations. The Summative Experience must be successfully completed as one of the final requirements for program completion.

### Elective Rotations

Choices for the elective rotation are:

Code	Title	Credits
PAS 733	Emergency Medicine Rotation II	5
PAS 735	Family Medicine Rotation II	5
PAS 738	General Surgery Rotation II	5
PAS 740	Internal Medicine Rotation II	5
PAS 742	Mental Health Rotation II	5
PAS 744	Pediatrics II	5
PAS 746	Women's Health II	5
PAS 749	Endocrinology I	5
PAS 750	Gastroenterology I	5
PAS 751	Ear, Nose and Throat Elective Rotation	5
PAS 752	Hematology & Oncology Elective Rotation	5
PAS 753	Orthopedics & Sports Medicine Preceptorship	5
PAS 754	Trauma Elective Rotation	5
PAS 755	Dermatology Elective Rotation	5
PAS 760	Cardiothoracic (CT) Surgery I Elective Rotation	5
PAS 762	Critical Care Medicine I Elective Rotation	5

## Tuition and Financial Aid

### PA Program Tuition & Financial Aid

Tuition rates for the PA Program are established by the Penn State University Board of Trustees in early July of each year, and are the same for residents and non-residents of Pennsylvania.

Cost of attendance includes tuition, fees, book/supplies and a standard student budget for room and board, transportation and personal expenses.

### Tuition

This website provides cost of attendance information for the current academic year. When necessary, this information will be updated after tuition charges are established each July. In our continued commitment to enroll students from disadvantaged backgrounds, **a tuition freeze has been in place since 2015.**

### Tuition Refund Policy

The Physician Assistant Program follows Penn State University's tuition refund policy (<http://www.bursar.psu.edu/refund.cfm>) in the event of student withdrawal from the program.

### Criminal Background Check

All students enrolled in the PA Program will be required to complete the necessary background checks to participate in clinical year. The total cost to complete this process is \$59.

### Books/Medical Equipment

Because of the extensive full-text electronic books and databases available through our medical library and the utilization of Penn State's state-of-the-art Simulation Center, our required textbook and equipment costs are considerably lower than many programs.

### Health Insurance

All PA students are required to have health insurance coverage. Documentation of coverage is required in order to waive the Penn State student health insurance plan. Penn State offers a health insurance plan for students and their dependents through Aetna. The annual rate for the period from August 2017 through July 2018 is \$3,418 for the student.

### Financial Aid

The Penn State College of Medicine Office of Student Aid is committed to assisting physician assistant students in making informed choices about paying for their graduate education. Although the primary financial responsibility for physician assistant education belongs to the student, there are financial sources that can be explored if financial assistance is necessary. The student aid office provides assistance and counseling to help students understand the financial resources available to them and how to obtain such resources.

The primary application for obtaining financial assistance at the Penn State College of Medicine is the Free Application for Federal Student Aid (FAFSA) (<https://studentaid.gov/h/apply-for-aid/fafsa/>). Our federal student code is **003329**.

### Primary Aid Sources

- **University Aid:** This includes scholarships and university loans and are almost exclusively need-based.
- **Federal Aid:** This includes the Direct Stafford Loan and Direct GradPlus Loan. These are non-need based.

### Contact Us

If you have questions about financial aid for the Physician Assistant program, please contact the Office of Student Aid at 717-531-7052 or [StudentAid@pennstatehealth.psu.edu](mailto:StudentAid@pennstatehealth.psu.edu).

## Accreditation

The Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) (<http://www.arc-pa.org/>) has granted Accreditation

- Continued status to the Penn State College of Medicine Physician Assistant Program sponsored by The Pennsylvania State University.

Accreditation-Continued is an accreditation status granted when a currently accredited program is in compliance with the ARC-PA Standards.

Accreditation remains in effect until the program closes or withdraws from the accreditation process or until accreditation is withdrawn for failure to comply with the Standards. The approximate date for the next validation review of the program by ARC-PA will be September 2027. The review date is contingent upon continued compliance with the Accreditation Standards and ARC-PA policy.

## **Professional Licensure/Certification**

Many U.S. states and territories require professional licensure/certification to be employed. If you plan to pursue employment in a licensed profession after completing this program, please visit the Professional Licensure/Certification Disclosures by State (<https://psu.edu/state-licensure-disclosures/>) interactive map.

## **Contact**

### **Physician Assistant Program**

Penn State College of Medicine  
500 University Drive  
Hershey, PA 17033

717-531-0003, ext. 285595

PSUPAProgram@pennstatehealth.psu.edu

# UNIVERSITY COURSE DESCRIPTIONS

Definitions for various components of a course description.

## Course-Numbering System

These course descriptions are arranged alphabetically. If any course cannot be located readily, refer to the index. Courses are numbered as follows:

**Undergraduate Courses (1 to 399):** General courses accepted in fulfillment of requirements for the bachelor's degrees. These courses are described in the Undergraduate Courses section (<https://bulletins.psu.edu/university-course-descriptions/undergraduate/>).

**Advanced Undergraduate Courses (400 to 499):** Courses open to graduate students and to juniors and seniors and, with the special written permission of the head of the department or the chair of the program sponsoring the course, to qualified students in earlier semesters. These courses are described in the Undergraduate Courses section (<https://bulletins.psu.edu/university-course-descriptions/undergraduate/>).

**Graduate Courses (500 to 699; 800 to 899):** Courses restricted to students registered in the Graduate School, seniors with an average of at least 3.50 (500- and 800-level only; excludes 600-level), and other students who have been granted permission to enroll by the dean of the Graduate School. These courses are described in the Graduate Courses section (<https://bulletins.psu.edu/university-course-descriptions/graduate/>). Undergraduate students who wish to enroll in 500- or 800-level courses should review the policy and follow the necessary procedures outlined in GCAC-507 Undergraduate Students Taking Graduate Courses (<http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-500/gcac-507-undergraduate-students-taking-graduate-courses/>).

**Medical Courses (700-799):** Courses restricted to students registered in the College of Medicine. These courses are described in the College of Medicine Courses section (p. 34).

**Law Courses (900-999):** Courses restricted to students registered in Penn State Law and Dickinson Law. These courses are described in the Penn State Law Courses section (<https://bulletins.psu.edu/university-course-descriptions/pennstatelaw/>) and Dickinson Law Courses section (<https://bulletins.psu.edu/university-course-descriptions/dickinsonlaw/>).

## Common Course Numbers

The following course numbers for which students may register have been set up for common use by major programs, with University Senate approval, to encourage innovation and provide flexibility in designing programs, but in no case may a course be scheduled for 0 credits.

**First-Year Seminar 187.** Listed under some liberal art-related academic headings, this course has prerequisites of first-semester standing and enrollment in the College of the Liberal Arts.

**Research Project Courses 294, 494.** 1-12 credits. Supervised student activities on research projects identified on an individual or small-group basis. A specific title may be used in each instance and will be entered on the student's transcript.

**Internship 295, 395, 495.** 1-18 credits. Supervised off-campus, non-group instruction including field experiences, practica, or internships. Written and oral critique of activity required. A specific title may be used in each instance and will be entered on the student's transcript.

**Independent Studies 296, 496.** 1-18 credits. Creative projects, including research and design, that are supervised on an individual basis and that fall outside the scope of formal courses. A specific title may be used in each instance and will be entered on the student's transcript.

**Special Topics 97, 197, 297, 397, 497; 98, 198, 298, 398, 498.** 1-9 credits. Formal courses given infrequently to explore, in depth, a comparatively narrow subject that may be topical or of special interest. Several different topics may be taught in one year or semester. A specific title may be used in each instance and will be entered on the student's transcript.

**Foreign Studies 99, 199, 299, 399, 499.** 1-12 credits. Courses offered in foreign countries by individual or group instruction. A specific title may be used in each instance and will be entered on the student's transcript. These courses typically carry the International Cultures (IL) attribute.

## Graduate Common Courses

**Colloquium 590.** Continuing seminars that consist of a series of individual lectures by faculty, students, or outside speakers.

**Research Topics 594.** Supervised student activities on research projects identified on an individual or small-group basis.

**Internship 595.** Supervised, research-oriented, off-campus, nongroup instruction, including field experiences, practicums, or internships. Written and oral critique of activity required.

**Individual Studies 596.** Creative projects, including nonthesis research, that are supervised on an individual basis and which fall outside the scope of formal courses.

**Special Topics 597, 598.** Formal courses given on a topical or special interest subject which may be offered infrequently; several different topics may be taught in one year or semester.

**Foreign Studies 599.** Courses offered in foreign countries by individual or group instruction.

**Thesis Research 600, 610.** In registering for thesis research, a student uses the appropriate number (600, 610) preceded by the abbreviation designating the major field. The numbers 600 (on campus) and 610 (off campus) are available for credit in thesis research in all graduate major programs. The bursar assesses charges for these courses at the current rate of tuition, according to the student's status at the time of registration.

**Ph.D. Dissertation 601, 611.** The numbers 601 and 611, with associated special fees, are available to Ph.D. degree candidates who have passed the comprehensive examination and met the two-semester residence requirement. They may be used for dissertation preparation work during its later stages, when the academic activity of the candidate consists partly (611) or solely (601) of work on the completion of research and writing of the dissertation.

SUBJ 601 and SUBJ 611 do not carry academic credit. They are entered on the academic transcript to indicate the registration and the nature of the candidate's academic activity. A candidate registered for SUBJ 601 is classified as a full-time student, while one registered for SUBJ 611 is classified as a part-time student.

The numbers 600, 601, 610, and 611 may not appear in the Schedule of Courses for each semester.

**Supervised Experience in College Teaching 602.** May be offered by any graduate program in a department that also offers undergraduate courses. A graduate program with no counterpart undergraduate program may offer SUBJ 602 when cooperative arrangements are made with an administrative unit that does not offer graduate degrees but that uses graduate assistants in its teaching. SUBJ 602 may be offered in any semester and is subject to the following restrictions:

1. SUBJ 602 will not be counted in fulfilling any specific credit requirement for an advanced degree.
2. SUBJ 602 will be graded (A, B, C, D, F). The grade will appear on the student's transcript.
3. SUBJ 602 will not be used in calculating grade-point averages.
4. SUBJ 602 shall be offered only in those graduate programs that want to provide opportunity for supervised and graded teaching experience. Enrollment will be restricted to students for whom the major program is prepared to provide such experience.
5. SUBJ 602 will be counted as a part of the student's credit load unless the program specifies otherwise.

**Foreign Academic Experience SUBJ 603.** Foreign study and/or research approved by the graduate program for students enrolled in a foreign university constituting progress toward the degree.

**Colloquium 890.** Continuing, professionally oriented seminars that consist of a series of individual lectures by faculty, students, or outside speakers.

**Capstone Experience 894.** Supervised, professionally oriented student activities that constitute the culminating experience for the program.

**Internship 895.** Supervised, professionally oriented, off-campus, nongroup instruction, including field experiences, practicums, or internships. Written and oral critique of activity required.

**Individual Studies 896.** Creative projects with a professional orientation, including nonthesis research, that are supervised on an individual basis and which fall outside the scope of formal courses.

**Special Topics 897, 898.** Formal courses given on a topical or special interest subject with a professional orientation that may be offered infrequently; several different topics may be taught in one year or semester. A specific title may be used in each instance and will be entered on the student's transcript. Multiple offerings may be accommodated by the use of suffixes A, B, etc.

**Foreign Studies 899.** Courses with a professional orientation offered in foreign countries by individual or group instruction.

## Course Attributes and Suffixes

Attributes and attribute values are course designations that are used to define specific characteristics for courses. The search for specific types of courses uses attributes and attributes are the most important notation for a course to satisfy a given requirement.

Suffixes are letters that follow a course number and allow for easier identification of a course's characteristics. Not all attributes and characteristics are captured in available suffixes and suffixes are not the feature used to determine if a course satisfies a requirement. The

degree audit and what-if reports use attributes, not suffixes, to determine applicability of a course to a requirement.

## Bachelor of Arts

### Attributes

- BA: Arts
- BA: Humanities
- BA: Natural Science
- BA: Other Cultures
- BA: Quantification
- BA: Social and Behavioral Sci
- World Lang (12th unit)
- World Language (all)

## Cultural Diversity

### Attributes

- International Cultures (IL)
- United States Cultures (US)

### Suffixes

- U: United States Cultures and/or International Cultures and Honors
- Y: United States Cultures and/or International Cultures and Writing Across the Curriculum

## General Education

### Attributes

- GenEd: Writing/Speaking (GWS)
- GenEd: Quantification (GQ)
- GenEd: Arts (GA)
- GenEd: Health Wellness (GHW)
- GenEd: Humanities (GH)
- GenEd: Natural Sciences (GN)
- GenEd: Social & Beh Sci (GS)
- GenEd Integrative: Interdomain
- GenEd Integrative: Linked

### Suffixes

- N: Inter-Domain
- Q: Inter-Domain and Honors
- Z: Linked Course. Approved Linked Course pairs must be confirmed by the Linked Course search feature in LionPATH.

## First-Year Engagement Program

### Attribute

- First-Year Seminar

### Course Subject

- PSU: First-Year Seminar

### Suffixes

- S: First-Year Seminar
- T: First-Year Seminar and Honors
- X: First-Year Seminar and Writing Across the Curriculum

## Writing Across the Curriculum

### Attribute

- Writing Across the Curriculum



**Suffixes**

- M: Writing Across the Curriculum and Honors
- W: Writing Across the Curriculum
- X: Writing Across the Curriculum and First-Year Seminar
- Y: Writing Across the Curriculum and United States Cultures and/or International Cultures

**Honors Courses****Attribute**

- Honors

**Suffixes**

- H: Honors
- M: Writing Across the Curriculum and Honors
- Q: Inter-Domain and Honors
- T: First-Year Seminar and Honors
- U: United States Cultures and/or International Cultures and Honors

**Undergraduate Course Lists**

Below are links to course lists that contain courses that are approved to satisfy either General Education, Bachelor of Arts, or other University Degree Requirements (e.g., Writing Across the Curriculum, First-Year Seminar, etc.). These lists updated periodically throughout the academic year.

**General Education Requirements**

- Arts Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/arts/>)
- Health and Wellness Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/health-wellness/>)
- Humanities Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/humanities/>)
- Inter-Domain Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/inter-domain/>)
- Linked Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/linked/>)
- Natural Sciences Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/natural-sciences/>)
- Quantification Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/quantification/>)
- Social and Behavioral Sciences Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/social-behavioral-sciences/>)
- Writing and Speaking Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/writing-speaking/>)

**Bachelor of Arts Degree Requirements**

- Arts Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-arts/>)
- Humanities Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-humanities/>)
- Natural Sciences Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-natural-sciences/>)
- Other Cultures Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-other-cultures/>)
- Quantification Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-quantification/>)

- Social and Behavioral Sciences Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-social-behavioral-sciences/>)
- World Language (12th Unit) Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-world-language-12th-unit/>)
- World Language (All) Courses (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/ba-world-language-all/>)

**Other University Degree Requirements**

- First-Year Seminar (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/first-year-seminar/>)
- International Cultures (IL) (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/international-cultures/>)
- United States Cultures (US) (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/united-states-cultures/>)
- Writing Across the Curriculum (<https://bulletins.psu.edu/undergraduate/general-education/course-lists/writing-across-curriculum/>)

**Course Credits**

In accordance with Senate Policy 42-23 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/42-00-acquisition-of-credit/#42-20>), for the typical student, a total of forty-five (45) hours of work planned and arranged by the University faculty is required to gain 1 credit. While the distribution of time varies from course to course, generally one-third of the time is devoted to formal instruction and two-thirds of the time to outside preparation. Course credit by instruction may be achieved by a variety of educational experiences that allow the student to work toward mastery of the course objectives. With the acknowledged goal of educational excellence, more than the minimum established here may be required for mastery of course objectives.

The number of credits for each course is indicated in parentheses and can be earned with classroom, practicum, or laboratory work as designated in LionPATH.

A department may schedule an entire section in an undergraduate course for fewer credits than the maximum authorized. In 400-level courses, a department may schedule an individual student for fewer credits than the maximum authorized. In no case, however, may the course be scheduled for 0 credit, or may the total credits scheduled for any student exceed the maximum number authorized for the course.

**Repeatable and Variable Credit Courses**

Some courses are designated as repeatable; they may be taken more than once for credit. These courses may be repeated indefinitely unless the department stipulates a maximum number of credits allowed. These courses appear with the maximum number of credits allowed following the number of credits for the course—for example (1.5 credits/maximum of 3).

Courses may have variable credits, such as (1-3), (2-6), or (3-10). Here, the larger number signifies the total credits that can be accumulated for the course over an indefinite number of semesters, unless otherwise specified. For example, a course listed with (1-6) could be taken six semesters for 1 credit each semester, or two semesters for 3 credits each semester, or once for 6 credits, etc.

In some courses with variable credits, students may be permitted to accumulate more than the larger number shown. Such courses will be listed as, for example, (1-3 per semester, maximum of 12).

Any special departmental limitations are indicated by footnotes.

## **Prerequisites, Concurrent Courses, Co-requisite Courses, and Recommended Preparation**

See also: Senate Policy 34-60 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/34-00-course-scheduling/#34-60>).

Prerequisites, concurrent courses, and co-requisite courses approximate the necessary specific coursework or general academic knowledge, background, or semester classification required to succeed academically in a given course.

- Prerequisites are courses or other requirements that must be completed prior to the start of a given course.
- Concurrent Courses are similar to prerequisites except that they may be taken prior to, or in the same semester as, the given course.
- Co-requisite Courses are pairs of courses required to be taken together in the same semester.

Registration in a given course is limited to students who have satisfied the stated prerequisite, concurrent, or co-requisite requirements. The course instructor has the right to permit students to take the course without having the stated prerequisite, concurrent, or co-requisite requirements, if the student demonstrates mastery of the material through some other means.

Recommended Preparation relates to preparatory skills or companion courses deemed useful, but not necessary, for successful completion of a course. Recommended preparation has no bearing on registration in a given course.

# COLLEGE OF MEDICINE COURSES

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## A

- Anatomy - MD (ANAT) (p. 35)
- Anesthesiology - MD (ANSTH) (p. 35)

## B

- Behavioral Influences Health (BIH) (p. 36)
- Biological Basis of Disease (BBD) (p. 36)

## C

- Cardiology - MD (CAR) (p. 36)
- Career Exploration and Synthesis (CES) (p. 36)
- Cellular and Molecular Basis of Medical Practice (CMBMP) (p. 37)
- Clinical Learning Competencies (CLC) (p. 37)
- Complementary Alternative Medicine (CAM) (p. 38)
- Culinary Medicine (CULMD) (p. 38)

## D

- Dermatology - MD (DERM) (p. 38)

## E

- Emergency Medicine - MD (EMED) (p. 38)
- Endocrinology - MD (END) (p. 39)
- Endocrinology and Reproductive Medicine (ENREP) (p. 39)
- Evidence-Based Medicine I (EBM) (p. 39)

## F

- Family and Community Medicine - MD (FCMED) (p. 39)
- Form and Function (FORM) (p. 41)
- Foundations of Clinical Medicine (FCM) (p. 41)
- Foundations of Patient Centered Care (FPCC) (p. 42)

## G

- Gastroenterology - MD (GI) (p. 42)
- Global Health (GH) (p. 43)

## H

- Hematology - MD (HEM) (p. 43)
- Humanities - MD (HMN) (p. 43)

## I

- Integrated Science (INTSC) (p. 47)

## M

- Medical Clerkship Island - MD (MCLKS) (p. 48)
- Medical Ethics Professionalism (MEP) (p. 48)
- Medical Home Curriculum (MHC) (p. 48)
- Medical Triage and Resuscitation (MEDTR) (p. 48)
- Medicine - MD (MED) (p. 48)

- Musculoskeletal Medicine - MD (MSC) (p. 51)
- Musculoskeletal System (MSK) (p. 51)

## N

- Neural and Behavioral Science (NBS) (p. 51)
- Neuroscience - MD (NEURO) (p. 51)
- Neurosurgery (NSURG) (p. 52)

## O

- Obstetrics and Gynecology - MD (OBGYN) (p. 52)
- Ophthalmology (OPHTH) (p. 53)
- Orthopaedics (ORTHO) (p. 54)

## P

- Pathology - MD (PATH) (p. 54)
- Patients and Sciences (PS) (p. 55)
- Pediatrics - MD (PED) (p. 56)
- Physical Medicine and Rehabilitation (PMR) (p. 58)
- Physician Assistant Studies (PAS) (p. 58)
- Primary Care Medicine (PCMED) (p. 75)
- Problem-Based Learning Facilitation - MD (PBL) (p. 76)
- Psychiatry - MD (PSCHT) (p. 77)
- Pulmonary Medicine - MD (PLM) (p. 77)

## R

- Radiology (RAD) (p. 78)
- Renal Medicine - MD (REN) (p. 79)
- Reproductive Medicine - MD (REP) (p. 79)
- Respiratory Medicine (RESP) (p. 79)

## S

- Sciences Health Systems (SHS) (p. 79)
- Scientific Principles of Medicine (SPM) (p. 80)
- Social Influences on Health (SIH) (p. 80)
- Socio-Ecological Medicine (SOEM) (p. 80)
- Structural Basis of Medical Practice (SBMP) (p. 80)
- Students as Educators (SAE) (p. 80)
- Surgery - MD (SURG) (p. 81)

## T

- Transition (TRANS) (p. 82)
- Transition Clinical Medicine (TCM) (p. 83)
- Translating Health Systems Science (THS) (p. 83)

## U

- Underserved Medicine and Domestic Health (UMDH) (p. 83)

## Anatomy - MD (ANAT)

ANAT 715: Human Gross Anatomy

6 Credits

This course will provide exposure to core human anatomical structures, emphasizing critical relationships and clinical significance.

**Prerequisite:** completion of all course work prerequisite for admission to the Penn State University College of Medicine; Concurrent: Foundations of Patient Centered Care; Public Health and Socio- Ecological Medicine

ANAT 743: Musculoskeletal Advanced Anatomy

3 Credits

This course provides exposure to the relevancy of anatomy to the clinical setting and specifically covers topics related to musculoskeletal clinical presentations.

**Prerequisite:** successful completion of the 3rd year of medical school

ANAT 797A: Advanced Dissection

1 Credits

Special topics course.

## Anesthesiology - MD (ANSTH)

ANSTH 700: Introduction to Anesthesiology and Perioperative Medicine

2.5 Credits/Maximum of 2.5

This 2 week elective is designed as an introduction to anesthesiology and perioperative medicine relevant to all medical specialties, and will be offered throughout Phases II-IV. Students will learn basic concepts of anesthesiology and have the opportunity to participate in patient care with the anesthesia team in the operating room environment and hospital. Daily clinical assignments with the anesthesia team will provide continuous direct supervision by anesthesiology faculty, residents, and nurse anesthetists. During the elective, students will apply foundational knowledge of physiology, pharmacology, and anatomy to patient care and learn the anesthetic implications of each. Students will also learn and apply knowledge of anesthesia concepts to preoperative evaluation, and how surgical indications and patient comorbidities influence anesthetic planning and delivery. Learning experiences will include observation, participation, and interactive discussions with the anesthesia team during clinical patient care. Students will attend the resident lecture series and spend a day in both the Chronic Pain Clinic and the Preoperative Evaluation Clinic. The simulation lab may be used to facilitate learning of proper monitor placement, airway management, and other skills. When appropriate and at the discretion of the faculty anesthesiologist, students will have the opportunity to perform basic monitoring placement and procedures under direct supervision during patient care. Students will be expected to complete required reading assignments and discussion questions based upon the learning objectives. Preparation for daily assignments will include knowledge of pertinent patient information from the electronic medical record and discussion of the anticipated anesthetic plan with the anesthesia team on the day prior to the planned surgical procedure. Clinical assignments will be determined by the course director and a core group of anesthesiology faculty, and will be released in congruency with the operating room schedule on the day prior to surgery. Students will be

expected to report in the morning to assist with operating room setup, and will remain with the assigned anesthesia team until completion of the day. Attendance at daily clinical assignments will be mandatory and excusals will be at the discretion of the course director. There will be no weekend or night call requirements.

**Prerequisites:** Successful completion of Phase I

ANSTH 701: Advanced Anesthesiology and Perioperative Medicine

2.5 Credits/Maximum of 2.5

This 2 week elective will build upon concepts learned during the prerequisite 2 week ANSTH 700 elective, and is designed for students interested in further knowledge and experience in clinical anesthesiology. It will be offered throughout Phases II-IV and is recommended for students interested in career exploration within the specialty of anesthesiology. Students will apply prior knowledge and newly learned concepts in the delivery of anesthesia during patient care. Upon completion of the elective, students will be expected to choose an appropriate anesthetic and pain management plan based upon patient conditions and surgical indications by applying advanced concepts of physiology, pharmacology, and anatomy. Perioperative patient care will occur largely within the operating room environment and perioperative setting. Daily clinical assignments with the anesthesia team will provide continuous direct supervision by anesthesiology faculty, residents, and nurse anesthetists. Learning experiences will include observation, participation, and interactive discussions with the anesthesia team during clinical patient care. Students will also have the opportunity to attend the resident lectures offered during the course. Case based learning discussion sessions and the simulation lab may be used to provide learning opportunities in addition to the operating room. At the discretion of the faculty anesthesiologist, students will have the opportunity to perform basic monitor placement and procedures under direct supervision during patient care. Students will be expected to complete required reading assignments and discussion questions based upon the learning objectives. Preparation for daily assignments will include knowledge of pertinent patient information from the electronic medical record and discussion of the anticipated anesthesia plan with the anesthesia team on the day prior to the planned surgical procedure. Clinical assignments will be determined by the course director and a core group of anesthesiology faculty, and will be released in congruency with the operating room schedule on the day prior to surgery. Students will be report in the morning to assist with operating room setup and will remain with the assigned anesthesia team until completion of the day. Attendance at daily clinical assignments will be mandatory and excusals will be at the discretion of the course director. There will be no weekend or night call requirements.

**Prerequisites:** ANSTH 700

ANSTH 740: Anesthesia Acting Internship

5 Credits/Maximum of 5

The acting internship in anesthesia is designed to expand on the experiences obtained in courses ANSTH 700 and 770.

**Prerequisite:** ANSTH700 , ANSTH770 , and third-year core clerkships

## ANSTH 770: Subspecialty and Complex Anesthesiology

5 Credits/Maximum of 40

This 4 week elective offered in Phase III/IV will build upon the concepts learned during the prerequisite 2 week electives, and is designed for students interested in preparation for a career in anesthesiology. The elective will be designed for students to function at the level expected of a resident intern on the anesthesia team. Students will have experiences in complex subspecialty cases including; pediatrics, obstetrics, cardiothoracic, vascular, acute pain management, and neurosurgery. Students will learn advanced applications of physiology, pharmacology, and anatomy in the care of patients with complex disease pathologies for subspecialty surgery. Perioperative patient care will occur largely within the operating room setting, including the Children's Hospital and Labor & Delivery Unit. Daily clinical assignments with the anesthesia team will provide continuous direct supervision by faculty, residents, and nurse anesthetists. Learning experiences will include observation, participation, and interactive discussions with the anesthesia team during clinical patient care. Students will attend the resident lecture series offered during the selective period. Daily performance evaluations by the anesthesia team will serve as formative and summative feedback. Case based learning discussions and the simulation lab may be used to provide additional learning opportunities. At the discretion of the faculty anesthesiologist, students will have the opportunity to perform monitor placement and basic procedures under direct supervision during patient care. Students will be expected to complete required reading assignments and discussion questions based upon the learning objectives. Preparation for daily assignments will include knowledge of pertinent patient information from the electronic medical record and discussion of the anticipated anesthetic plan with the anesthesia team prior to the surgical procedure. Clinical assignments will be determined by the course director and a core group of anesthesiology faculty, and will be released in congruency with the operating room schedule on the day prior to surgery. Students will report in the morning to assist with operating room setup and will remain with the assigned anesthesia team until completion of the day. Attendance at daily clinical assignments will be mandatory and excusals will be at the discretion of the course director. Students will be expected to participate in one weekend and three overnight calls during the 4 week period.

**Prerequisite:** ANSTH 700 and ANSTH 701

## ANSTH 772: Pain Management

5 Credits/Maximum of 40

Includes evaluation, diagnosis, and treatment of complex chronic pain problems in an outpatient model. A hands-on approach will be emphasized.

**Prerequisite:** completion of first three years of medical curriculum

## ANSTH 796: Anesthesia Individual Studies

5 Credits/Maximum of 40

Special studies program, usually involving investigative work, all hours and assignments by arrangement with a member of the anesthesia staff-faculty.

**Prerequisite:** successful completion of third year core clerkships. Students must contact course director for pre-approval prior to registering for this course.

## ANSTH 797: Anesthesia Special Topics

5 Credits/Maximum of 40

## Anesthesia Special Topics

**Prerequisite:** successful completion of 3rd year core clerkships

## Behavioral Influences Health (BIH)

## BIH 722: Behavioral Influences on Health

3 Credits

Fundamental course addressing the physician's role in teaching the importance of individual choice and responsibility in maintaining health.

**Prerequisite:** successful completion of all medical school year one courses

## Biological Basis of Disease (BBD)

## BBD 716: Biological Basis of Disease

6 Credits

This integrated course includes topics in microbiology, immunology, pathology, pharmacology, and human genetics.

**Prerequisite:** structural basis of medical practice, cellular and molecular basis of medical practice

## Cardiology - MD (CAR)

## CAR 713: Cardiovascular Medicine

1-2 Credits

Course provides exposure to basic concepts in histology/pathology, biochemistry, physiology, pharmacology, and clinical medicine related to cardiovascular medicine.

**Prerequisite:** must have completed all preceding course work in the first year of medical school

## CAR 722: Cardiology

4.5 Credits

These areas will be studied: Symptoms and Signs; Systemic Arterial Hypertension; Atherosclerosis; Heart Failure; Congenital Heart Disease; Infectious, Inflammatory, and Immunologic Disease; Connective Tissue Disorders; Electrical Abnormalities; and Lipid Disorders.

**Prerequisite:** successful completion of MS Year I

## Career Exploration and Synthesis (CES)

## CES 730: Career Exploration and Synthesis

2.5 Credits/Maximum of 7.5

Given that students in Phase 2 are required to have 3 separate two-week clinical exposures, CES provides opportunities in addition to existing formal two-week electives. To that end, Career Exploration and Synthesis

is a 2 week clinical experience in a medical or surgical discipline of the student's choice at the end of each block in phase II. This time is intended to permit exploration of various career options, extension of clinical experiences and synthesis of material learned throughout the block, and allow for individualization of learning in the clerkships.

**Prerequisite:** Completion of phase I

CES 731: Career Exploration and Synthesis-Longitudinal Integrated Clerkship (CES-LIC)

5-7.5 Credits/Maximum of 7.5

All Phase II - Clerkship students are required to take the equivalent of 7.5 credits of Career Exploration and Synthesis electives, so the CES-LIC provides the opportunity to take all or a portion of these electives in a longitudinal rather than a block format. For students participating in an LIC, Career Exploration and Synthesis-LIC is a longitudinal clinical experience in a clinical discipline of the student's choice that occurs concurrently with the other LIC courses. This time is intended to permit exploration of various career options, extension of clinical experiences and synthesis of material learned throughout the LIC, and allow for individualization of learning in the clerkships.

**Prerequisite:** Completion of Phase I, Corequisites: Core Clerkships

## Cellular and Molecular Basis of Medical Practice (CMBMP)

CMBMP 711: Cellular and Molecular Basis of Medical Practice

7 Credits

This integrated course includes topics in biochemistry, physiology, pharmacology, and molecular genetics.

**Prerequisite:** structural basis of medical practice

CMBMP 712: Cellular and Molecular Basis of Medical Practice

7 Credits

Continuation of CMBMP 711.

**Prerequisite:** structural basis of medical practice

## Clinical Learning Competencies (CLC)

CLC 712: Clinical Learning Competencies I

3 Credits

This course will begin to develop the medical students' basic clinical reasoning methods, self-learning concepts and the development of clinical competencies.

**Prerequisite:** entrance into medical school; Concurrent: Cellular and Molecular Basis of Medical Practice Biological Basis of Disease

CLC 713: Clinical Learning and Competencies I

1-2 Credits

This course will develop basic clinical reasoning methods, self-learning skills, and clinical competencies appropriate for first-semester medical students.

**Prerequisite:** entrance into medical school; Concurrent: all first semester medical school courses

CLC 714: Clinical Learning and Competencies II

1-2 Credits

This course will continue development of basic clinical reasoning methods, self-learning skills, and clinical competencies appropriate for second- semester medical students.

**Prerequisite:** completion of all previous medical school courses; Concurrent: all second semester medical school courses including hematology, cardiology, renal medicine, and pulmonary medicine

CLC 721: Clinical Learning and Competencies II

8 Credits

This course will continue the development of medical students' basic clinical reasoning methods, self-learning concepts and development of clinical competencies that were provided in CLC 721.

**Prerequisite:** SBMP 715 , CMBMP711 , CMBMP712 , BBD 716 , CLC 712; Concurrent: HEM 721 , CAR 722 , PLM 726 , REN 728 , GI 729

CLC 722: Clinical Learning and Competencies III

5 Credits

This course will continue the development of medical students' basic clinical reasoning methods, self-learning concepts and development of clinical competencies that were provided in CLC 721.

**Prerequisite:** SBMP 715 . CMBMP711 , CMBMP712 , BBD 716 , HEM 721 , CAR 722 , PLM 726 , REN 728 , GI 729 , CLC 721; Concurrent: NBS 725, MSC 727 , DERM 720 , REP 730 , END 731 , FCM 723 , Behavioral Influences on Health

CLC 723: Clinical Learning and Competencies III

1-2 Credits

This course will further continue the development of basic clinical reasoning methods, self-learning skills, and clinical competencies appropriate for third-semester medical students.

**Prerequisite:** completion of all previous medical school courses; Concurrent: all third semester medical school courses

CLC 724: Clinical Learning and Competencies IV

1-2 Credits

This course will continue development of basic clinical reasoning methods, self-learning skills, and clinical competencies for fourth-semester medical students.

**Prerequisite:** completion of all previous medical school courses;  
Concurrent: the fourth semester medical school courses

## Complementary Alternative Medicine (CAM)

CAM 742: Herbal and Natural Products as Therapeutics

5 Credits

This course will assess safety, efficacy, and applicability of natural products as therapeutic options for management of common medical conditions.

**Prerequisite:** successful completion of all required their year medical school courses or approval by course director

## Culinary Medicine (CULMD)

CULMD 740: Clinical Elective in Culinary Medicine

2.5 Credits

The Culinary Medicine course will teach fundamental dietary and nutrition knowledge with basic culinary skills through inter-professional hands-on community cooking classes. Lessons will be keyed to both the basic science curriculum while linking concepts learned to the practical clinical skills needed for the patient physician discussion about the importance of dietary and lifestyle change. Most time in the classroom is spent in an interactive environment in the kitchen. Since this elective is integrated with community members, students will get a true opportunity to develop relationships with community members and practice nutrition and counseling skills. Students will be guided to lead small group discussions covering the daily culinary medicine topics with community members during each class

**Prerequisite:** Successful admission to COM

## Dermatology - MD (DERM)

DERM 720: Dermatology

3 Credits

Interdisciplinary - Medical Education Course

**Prerequisite:** successful completion of MS Year I

DERM 732: Dermatology Elective

5 Credits/Maximum of 5

Designed to provide students with an extensive, in-depth exposure to clinical dermatology; involved in the evaluation and management of patients in dermatology clinics.

**Prerequisite:** Third Year Core Clerkships

DERM 740: Dermatology/Pathology Elective

5 Credits/Maximum of 5

Intended for students pursuing a career in dermatology or pathology; involves the study of the pathology of cutaneous disorders. The elective complements what is learned in dermatology and pathology rotations.

**Prerequisite:** successful completion of 3rd year core clerkships. Students must contact course director to receive prior approval before registering for this course.

DERM 740A: Clinical Elective in Dermatology

2.5 Credits/Maximum of 2.5

The Clinical Dermatology elective is a TWO-week course that is designed to cover the skin conditions that are most germane to any general practitioner. The course will provide an introduction to several common diseases that affect the skin and their diagnosis, pathology, and treatment. This course is focused on the most common and most important diseases and therapies from a public health standpoint. This course is not suggested for students pursuing a career in dermatology (the 4-week elective [DERM 732] is suggested for these students). Course material will be presented in the form of workplace teaching in the clinic, microscopic teaching in the dermatopathology practice site, and readings from textbooks and online learning modules. Central themes of the course are visual recognition of the cutaneous findings and the ability to accurately describe these findings. Patient care hinges upon first visualizing the abnormality after which the descriptive terminology can facilitate the generation of a differential diagnosis.

**Prerequisite:** Successful completion of Phase I

DERM 796: Dermatology Individual Studies

5 Credits/Maximum of 5

This course provides an opportunity for senior medical students to pursue individual dermatology research projects with a supervising faculty dermatologist.

**Prerequisite:** Restricted to students enrolled in The Pennsylvania State University College of Medicine. Students must have completed the dermatology elective (DERM 732).

DERM 796A: Dermatology Individual Studies for 3rd Year Students

2.5 Credits

Dermatology Individual Studies for 3rd Year Students.

DERM 797: Dermatology Special Topics

5 Credits/Maximum of 5

Dermatology Special Topics.

**Prerequisite:** successful completion of 3rd year core clerkships

## Emergency Medicine - MD (EMED)

EMED 740: Emergency Medicine Ultrasound

5 Credits/Maximum of 5

This course provides hands-on exposure to bedside ultrasound image acquisition and interpretation in the Emergency Department.

**Prerequisite:** successful completion of Year III and must have previously taken an Emergency Medicine elective or AI.

**EMED 745: Pediatric Emergency Medicine Elective**

5 Credits/Maximum of 5

This course is designed to provide a Pediatric Emergency Medicine Experience for students interested in the acute care of children and is designed to expose the students to the broad range of conditions that present to a Pediatric Emergency Department.

**Prerequisite:** third year clerkships in Pediatrics and at least two other core third year clerkships

**EMED 752: Emergency Medicine Acting Internship**

5 Credits/Maximum of 5

Supervised experience in the management of acute medical and surgical conditions in the emergency care unit.

**Prerequisite:** successful completion of all third year core clerkships

**EMED 754: Toxicology Elective**

5 Credits

Toxicology admissions and consults; weekly two-hour conferences; poison center sign-out rounds; exposure to the most common toxicologic poisonings; research opportunities.

**Prerequisite:** completion of third year of medical school

**EMED 756: Emergency Medicine Elective for Third Year Students**

2.5 Credits

Introduction for the 3rd year medical student to various aspects of Emergency Medicine.

**Prerequisite:** completion of the second year of medical school

**EMED 796: Emergency Medicine Independent Studies**

5 Credits/Maximum of 5

Emergency Medicine Independent Studies

**Prerequisite:** Successful completion of all 3rd year clerkships

**EMED 797: Emergency Medicine Special Topics**

5 Credits/Maximum of 5

Emergency Medicine Special Topics

**Prerequisite:** Successful completion of all third year clerkships

**Endocrinology - MD (END)**

END 731: Endocrinology

3 Credits

These areas will be studied: Pituitary Disease; Thyroid Disease; Hyperthyroidism; Sexual Development; disorders of Calcium and Phosphorus; Adrenal Disease; Diabetes Mellitus; Hypoglycemia; and Normal and Abnormal Growth.

**Prerequisite:** successful completion of MS Year I

**Endocrinology and Reproductive Medicine (ENREP)**

ENREP 721: Endocrinology and Reproductive Medicine

6 Credits/Maximum of 6

This is a required course designed to introduce medical students to the essential fundamental principles underlying endocrinology and reproduction. The complex nature of endocrine and reproductive feedback mechanisms requires students to understand and apply critical thinking skills so that they will be able to integrate fundamental scientific knowledge with clinical reasoning skills, preparing them for effective learning in the clinical phase of their education. These goals include: - Compare and contrast the regulation of different target organs by the pituitary gland and hypothalamus. - Discover the role of the thyroid hormones on the metabolic process. - Describe the role of diabetes and obesity in human health. - Analyze the normal and abnormal function of the adrenal glands and how these interact with other organ systems. - Describe the steps of development from embryo to adulthood - Explain the process of pregnancy and recognize possible abnormalities during this period. - Discuss the issues related to men's and women's health and predict the differential diagnosis according to specific risk factors. This course is presented annually during Phase I (Foundational Medical Sciences - the first 18 months of medical school) of the medical school curriculum and is a required course for all medical students. Assessment methods are discussed in paragraph C-2.

**Evidence-Based Medicine I (EBM)**

EBM 713: Evidence-based Medicine I

1 Credits

This is fundamentally a course about applying the basic principles of clinical epidemiology/biostatistics to clinical medicine. Physicians need to be knowledgeable consumers of medical literature/information whatever the source. Physicians need to be able to judge the validity of scientific evidence and apply it to patient care.

EBM 723: Evidence-based Medicine II

1 Credits

This is fundamentally a course about applying the basic principles of clinical epidemiology/biostatistics to clinical medicine. Physicians need to be knowledgeable consumers of medical literature/information whatever the source. Physicians need to be able to judge the validity of scientific evidence and apply it to patient care.

**Family and Community Medicine - MD (FCMED)**

FCMED 722: Family Medicine Acting Internship

5 Credits/Maximum of 5

The goal of the inpatient experience is to allow the fourth-year medical student to accept responsibility for the planning and execution of ongoing care of hospitalized patients, evaluate patients in the emergency room to determine if hospitalization is necessary and to perform the duties of an admitting physician. The student will work as a member of the family medicine inpatient service team and will remain in the hospital



until the days' work is completed. The student will have one weekend free. Three weekends will be spent working with the inpatient team.

**Prerequisite:** successful completion of all third-year clerkships

FCMED 730: Advanced Communications Elective - Paired Observation & Video Editing (POVE)

5 Credits

Provides the opportunity for students working together to advance their communication skills in clinical settings.

**Prerequisite:** successful completion of third year required clerkships

FCMED 731: Family Medicine Inpatient Elective

2.5 Credits/Maximum of 2.5

Faculty in Family and Community Medicine (FCM) have developed a hands-on in-depth immersion in hospital-based medicine embedded in the FCM Inpatient Medical Service at the Penn State Milton S. Hershey Medical Center and College of Medicine. This 2 week experience prepares students to work in teams to improve patient outcomes by addressing complex medical issues, while gaining a greater understanding of the continuity that Family Medicine clinicians provide to their patients. Students will be able to expand their medical knowledge through both hands-on care, didactic lectures and interactive discussions, and they will be able to apply and enhance their critical thinking skills. Most didactic lessons will be available online for further review and to allow asynchronous learning. Students will work with the FCM Inpatient Team and develop transitional care plans to treat acute and chronic medical problems. Coordination of care with the Discharge Planning Team will be emphasized to ensure that patients are adequately prepared for hospital discharge. Factors that affect patient health post-discharge such as Social Determinants of Health and Transitional Care Management will also be discussed, and students may have the opportunity to follow up with their patients in the outpatient clinic or post-discharge settings such as a skilled nursing facility. Students will learn more about the key competencies espoused by the Interprofessional Education Collaborative (IPEC), and how knowledge and application of these competencies can enhance the patient experience and improve overall outcomes of patient care. The real-world interaction of this process helps students become part of a team that focuses on individual patient-centric care and patient-specific needs and the individual barriers that may prevent such ideal care. At the completion of this course students should have a better clinical understanding of the health systems science principles as they apply in the inpatient setting, and they will have a better command of the knowledge that is necessary to shepherd these patients safely through the hospital admission.

FCMED 743: Family Medicine Residency Preparatory Course

2.5 Credits/Maximum of 2.5

This course is designed to prepare students who are planning on entering into a family medicine residency for the transition to intern year. It is designed to build specific skill sets to facilitate that transition with the goal of bringing many of the topics introduced throughout medical school into a clinical context relevant to family medicine. Topics covered throughout the course include: management of acute inpatient and obstetric scenarios, core intern skills such as daily inpatient and outpatient care pearls, responding to pages, and procedural training. There will also be panel discussions on future career paths from a family medicine residency. The design of the course includes multiple

educational venues. There will be several sessions conducted in the simulation center with a focus on case-based acute medical and obstetric scenarios. Other sessions will be done in small-group didactic settings in which interactive participation is encouraged. Several panel discussions as noted above will also be included. Upon completion of the course, participants will be able to perform initial steps in the evaluation and management of common acute medical and obstetrical scenarios. Additionally, they will have improved confidence in a variety of key skills for daily inpatient and outpatient care of a broad-spectrum of patients. Pre- and post-surveys will be performed to assess participants' confidence in these areas. Direct observation of student performance will take place in simulated case scenarios and paging simulations. Grading will be Pass-Fail based on active participation, attendance, and evaluations of simulated paging and case scenarios.

**Prerequisite:** Successful completion of phases I and II. Students should have applied to/matched into a family medicine residency.

FCMED 744: Addiction Medicine Elective

5 Credits/Maximum of 5

The addiction medicine elective is a FOUR-week course typically delivered in Phase III that is designed to enhance comfort with addiction medicine and chronic pain management in the inpatient and outpatient settings. The course will focus on principles of addiction medicine and chronic pain management, with an emphasis on opioids. Course material will be presented in the form of workplace teaching in the clinic and readings from textbooks and online learning modules. Central themes of the course are identification of opioid use disorder in the clinical setting, the role of medications for treatment of substance use disorders, Alcoholics Anonymous (AA) and Narcotics Anonymous (NA), and outpatient therapy for treatment of addiction as well as non-opiate treatment of chronic pain.

FCMED 771: Family & Community Medicine Clerkship

5 Credits/Maximum of 5

Student participation in ambulatory clinical care of the patient in his own environment and in a variety of health care centers.

FCMED 796: Family & Community Medicine Individual Studies

5 Credits/Maximum of 5

Creative projects including nonthesis research, which are supervised on an individual basis and which fall outside the scope of formal courses.

**Prerequisite:** successful completion of 3rd year core clerkships

FCMED 796A: Family & Community Medicine Individual Studies for 3rd Year

2.5 Credits

Family & Community Medicine Individual Studies for 3rd Year.

FCMED 797: Family & Community Medicine Special Topics

5 Credits/Maximum of 5

Advanced training in interpersonal communication skills, community health, rural health, ambulatory care analysis, clinical nutrition, geriatrics, and other topics.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## Form and Function (FORM)

FORM 713: Form and Function

3.5 Credits/Maximum of 3.5

The Musculoskeletal System Dermatology Rheumatology (MSDR) course aims to give learners an organized educational experience that is broad yet practical, and integrates orthopedic, rheumatologic, and dermatologic diseases. The pathogenesis, recognition of clinical findings, diagnostic procedures and introduction to therapies pertinent to general medical practice will be prominent. Material will complement students' work on clinical skills in Foundations of Patient Centered Care (FPCC) and the concurrent Anatomy course. This course is presented annually during Phase I (Foundational Medical Sciences - the first phase of medical school) of the medical school curriculum and is a required course for all medical students. Assessment methods are discussed in Evaluation Methods section.

**CONCURRENT:** HMN 713, SHS 711, FPCC 713 Anatomy

## Foundations of Clinical Medicine (FCM)

FCM 713: Foundations of Clinical Medicine I

2 Credits

Foundational course that teaches the basics of physical diagnosis, clinical interviewing and the doctor-patient relationship. FCM 713 Foundations of Clinical Medicine I (2) Foundations of Clinical Medicine is a course that spans the first two years of the medical school curriculum, and consists of three components: Clinical Interviewing, Physical Diagnosis, and Clinical Skills teaching sessions. Each of these components occur in both Foundations of Clinical Medicine I and Foundations of Clinical Medicine II. The Clinical Interviewing component in Year 1 introduces the nature and importance of the doctor-patient relationship and teaches the primary skills of clinical interviewing. During this component, students attend lecture format sessions to introduce general concepts, as well as small group sessions with their assigned facilitator to review and practice their interviewing skills with standardized patients. The Physical Diagnosis component in Year 1 introduces the basic elements of the physical examination, and provides a setting in which students can begin to practice their exam skills. Students attend both lecture and small group sessions. A special feature of the year one curriculum is that the physical diagnosis sessions are timed so they occur soon after students have learned the anatomy of the corresponding body part. The Clinical Skills component takes place throughout the first and second years. Students work with an assigned faculty member, who also serves as their academic advisor. A total of four sessions take place during the first year, and occur in either an inpatient or outpatient setting. During these sessions, students get their first true interaction with patients as they practice history-taking and physical examination under the direct guidance of a clinician. Their clinical skills faculty member provides pertinent feedback and directed guidance. An additional ten sessions then continue into the second year, with students continuing to work with the same faculty member to hone their clinical skills. At the end of the Foundations of Clinical Medicine I course, students are expected to have mastered the introductory elements of

clinical interaction and be confident in a patient care setting. This course will serve as the basis for further refinement of their clinical skills in the second year of medical school and throughout their clerkships.

**Prerequisite:** Medical school enrollment/successful completion of undergraduate pre-medical courses

FCM 714: Foundations of Clinical Medicine I

2 Credits

Foundational course that teaches the basics of physical diagnosis, clinical interviewing and the doctor-patient relationship. FCM 714 Foundations of Clinical Medicine I (2) Foundations of Clinical Medicine is a course that spans the first two years of the medical school curriculum, and consists of three components: Clinical Interviewing, Physical Diagnosis, and Clinical Skills teaching sessions. Each of these components occur in both Foundations of Clinical Medicine I and Foundations of Clinical Medicine II. The Clinical Interviewing component in Year 1 introduces the nature and importance of the doctor-patient relationship and teaches the primary skills of clinical interviewing. During this component, students attend lecture format sessions to introduce general concepts, as well as small group sessions with their assigned facilitator to review and practice their interviewing skills with standardized patients. The Physical Diagnosis component in Year 1 introduces the basic elements of the physical examination, and provides a setting in which students can begin to practice their exam skills. Students attend both lecture and small group sessions. A special feature of the year one curriculum is that the physical diagnosis sessions are timed so they occur soon after students have learned the anatomy of the corresponding body part. The Clinical Skills component takes place throughout the first and second years. Students work with an assigned faculty member, who also serves as their academic advisor. A total of four sessions take place during the first year, and occur in either an inpatient or outpatient setting. During these sessions, students get their first true interaction with patients as they practice history-taking and physical examination under the direct guidance of a clinician. Their clinical skills faculty member provides pertinent feedback and directed guidance. An additional ten sessions then continue into the second year, with students continuing to work with the same faculty member to hone their clinical skills. At the end of the Foundations of Clinical Medicine I course, students are expected to have mastered the introductory elements of clinical interaction and be confident in a patient care setting. This course will serve as the basis for further refinement of their clinical skills in the second year of medical school and throughout their clerkships.

**Prerequisite:** Medical school enrollment/successful completion of undergraduate pre-medical courses

FCM 723: Foundations of Clinical Medicine II

2 Credits

Advanced course that teaches the basics of physical diagnosis, clinical interviewing and the doctor-patient relationship. FCM 723 Foundations of Clinical Medicine II (2) Foundations of Clinical Medicine is a course that spans the first two years of the medical school curriculum, and consists of three components: Clinical Interviewing, Physical Diagnosis, and Clinical Skills teaching sessions. Each of these components occurs in both Foundations of Clinical Medicine I and Foundations of Clinical Medicine II. During Foundations of Clinical Medicine II, students continue to apply and further develop the attitudes, knowledge, and skills acquired in Foundations of Clinical Medicine I. Building upon concepts introduced in Foundations of Clinical Medicine I, the clinical interviewing portion

of Foundations of Clinical Medicine II expands the doctor-patient relationship by allowing students to practice obtaining more directed and/or sensitive historical information (such as pediatric and geriatric interview and sexual history) and guiding them through complex clinical interactions (such as cultural differences). The physical diagnosis component then reviews more advanced physical diagnosis skills and provides a supervised setting for practicing performance of these skills prior to actual patient encounters. Specifically, students attend both lecture sessions and clinical modules designed to incorporate advanced examination skills, such as the neurological exam, the pediatric exam, the geriatric exam, the breast and female genitalia exams, and the male genitalia exam. The Clinical Skills component also continues in Foundations of Clinical Medicine II, with the majority of clinical skills contact hours taking place in the second year. Students work with their previously assigned faculty member who also serves as their academic advisor. A total of ten sessions take place throughout the second year, and occur in either an inpatient or outpatient setting. Their clinical skills faculty member provides pertinent feedback and directed guidance, while developing the student's ability to interview and examine patients, orally present their findings, document the interaction in the medical record, develop a problem list, and consider the differential diagnosis.

**Prerequisite:** Successful completion of FCM 713 and FCM 714 and the first year of medical school

FCM 724: Foundations of Clinical Medicine II

2 Credits

Advanced course that teaches the basics of physical diagnosis, clinical interviewing and the doctor-patient relationship. FCM 724 Foundations of Clinical Medicine II (2) Foundations of Clinical Medicine is a course that spans the first two years of the medical school curriculum, and consists of three components: Clinical Interviewing, Physical Diagnosis, and Clinical Skills teaching sessions. Each of these components occurs in both Foundations of Clinical Medicine I and Foundations of Clinical Medicine II. During Foundations of Clinical Medicine II, students continue to apply and further develop the attitudes, knowledge, and skills acquired in Foundations of Clinical Medicine I. Building upon concepts introduced in Foundations of Clinical Medicine I, the clinical interviewing portion of Foundations of Clinical Medicine II expands the doctor-patient relationship by allowing students to practice obtaining more directed and/or sensitive historical information (such as pediatric and geriatric interview and sexual history) and guiding them through complex clinical interactions (such as cultural differences). The physical diagnosis component then reviews more advanced physical diagnosis skills and provides a supervised setting for practicing performance of these skills prior to actual patient encounters. Specifically, students attend both lecture sessions and clinical modules designed to incorporate advanced examination skills, such as the neurological exam, the pediatric exam, the geriatric exam, the breast and female genitalia exams, and the male genitalia exam. The Clinical Skills component also continues in Foundations of Clinical Medicine II, with the majority of clinical skills contact hours taking place in the second year. Students work with their previously assigned faculty member who also serves as their academic advisor. A total of ten sessions take place throughout the second year, and occur in either an inpatient or outpatient setting. Their clinical skills faculty member provides pertinent feedback and directed guidance, while developing the student's ability to interview and examine patients, orally present their findings, document the interaction in the medical record, develop a problem list, and consider the differential diagnosis.

**Prerequisite:** Successful completion of FCM 713 and FCM 714 and the first year of medical school

## Foundations of Patient Centered Care (FPCC)

FPCC 713: Foundations of Patient Centered Care - I

2 Credits

First semester of a four-part course to learn and apply clinical interviewing and examination skills at the novice level integrated with healthcare practice topics.

FPCC 714: Foundations of Patient Centered Care - 2

2 Credits

Second semester of a four-part course to learn and apply clinical interviewing and examination skills at the advanced beginner level integrated with healthcare practice topics.

FPCC 723: Foundations of Patient Centered Care - 3

2 Credits

Third semester of a four-part course to learn and apply clinical interviewing and examination skills at the competent level integrated with healthcare practice topics.

FPCC 724: Foundations of Patient Centered Care - IV

2 Credits

Fourth semester of a four-part course to learn and apply clinical interviewing and examination skills at the proficient level integrated with healthcare practice topics.

## Gastroenterology - MD (GI)

GI 723: Gastrointestinal Pathophysiology and Nutrition

1 Credits

Course provides exposure to foundational sciences and clinical medicine relating to the gastrointestinal tract, pancreas, biliary system, and liver, and nutrition.

**Prerequisite:** completion of all preceding course work

GI 729: Gastroenterology

5 Credits

Some of the areas studied will be: smooth muscle physiology; peristalsis and sphincter function; neuro-homonal control of motility; psychophysiological interaction in the gut; and symptoms of altered GI motility.

**Prerequisite:** successful completion of MS Year I

## Global Health (GH)

GH 717: Global Health Scholars First Year Elective

1-5 Credits

This course provides exposure to basic concepts of global health, tailored to first year medical students with a focus on community health assessment and engagement.

**Prerequisite:** Acceptance into the Global health Scholars Program through a competitive application process. The online application process is made available to all first year medical students in the Fall. All applications are kept confidential

GH 727: Global Health Scholars Second Year Elective

1-5 Credits

This course provides exposure to basic concepts of global health, designed for the second year medical students, with a focus on the global burden of disease and community-oriented participatory research. Students will utilize the knowledge and skills gained during this year, guided by faculty, to develop a health improvement intervention for the host site (e.g. San Pablo, Ecuador). This elective does not meet graduation requirements. It is offered as part of the Global Health Scholars Program.

**Prerequisite:** successful completion of GH 717

GH 747: Global Health Scholars Fourth Year Elective

4 Credits

Global Health Scholars 4th year elective.

**Prerequisite:** successful completion of GH 717 and GH 727

## Hematology - MD (HEM)

HEM 721: Hematology

3 Credits

Some of the areas studied will be: Erythrocyte Disorders; Hemostasis; Myeloid Stem Cell Disorders; Lymphoproliferative and Immunoproliferative Diseases; Blood Banking; and Hematology Laboratory.

**Prerequisite:** successful completion of MS Year I

HEM 723: Hematology

1-2 Credits

This course will provide an introduction to normal structure, function and diseases of the blood and blood forming organs and lymphatics, including topics relevant to both the basic science and clinical aspects of the science of hematology.

**Prerequisite:** successful completion of the preceding first year courses

## Humanities - MD (HMN)

HMN 711: Foundations of Health Humanities

5 Credits/Maximum of 5

As the introductory course in the Humanities Phase 1 sequence, we will devote class time considering issues of pressing social interest, including structural inequities like racism and discrimination in medicine, justice, and unconscious bias. The course also introduces primary skills in narrative medicine, clinical ethics, and anthropology, all of which promote clinical practices that are inclusive, culturally sensitive, and self-aware. A primary conceptual framework that guides the course is the social construction of reality. Our worlds are both biologically and socially constructed. Biological construction addresses how our bodies work as organisms, why we are healthy or sick, and how to treat illness so that we can become well. Social construction addresses the social worlds, values, stories and structures that we create to sustain ourselves as individuals, families, and communities. The social construction framework explains the way our minds perceive reality and shape it. If we understand how our realities are constructed, we can find ways to change those realities that are harmful-either by creating biochemical treatments to fight disease or to identify and then alter behaviors that lead to discriminatory practices. Many disciplinary approaches in the social sciences and humanities illuminate the social construction of reality. This course provides students with conceptual frameworks to refer to during their entire medical school experience.

**Concurrent:** Organ systems, clinical skills, and systems courses in Phase I of the MD program.

HMN 713: Medical Humanities

5 Credits

Medical Humanities introduces the first-year student of medicine to topics which explore questions of value and meaning in and around medicine.

**Prerequisite:** enrollment in the College of Medicine

HMN 714: The Science of Mind-Body

2 Credits/Maximum of 2

This course is offered once per year to first year medical students at the College of Medicine. The primary goal of the course is for students to gain an understanding of and respect for the scientific basis and impact of the mind on the body, and of the body on the mind. Therefore, the course will blend aspects of both fields (i.e., how the physiology of stress may be expressed in a primary care clinic in disorders such as migraine headaches, irritable bowel syndrome). A goal of this course is for medical students to not only understand the scientific basis of the covered topics, but to also see how each of the topics may be either personally or clinically relevant. By the end of the course, it is expected that students will be able to: 1. Explain the physiology of stress as it relates to health and disease. 2. Explore psychological factors that influence the placebo effect, behavior change, and adherence. 3. Appraise meditation and mindfulness and the potential physiologic and psychological benefits to patients. 4. Develop an exercise prescription using the key components identified in class. 5. Describe the impact of trauma (physical and psychological) on health and the role of defense mechanisms and resilience in health, disease, and healing. 6. Examine

the concept of humor as a source of healing. 7. Apply each session topic to themselves or their patient experiences.

#### HMN 715: Critical Thinking for Medical Practice

2 Credits/Maximum of 2

This two-credit, six-session course is part of the sequence of Medical Humanities courses required for first-year medical students at the Hershey campus of the Penn State College of Medicine. Critical thinking is a skill that is fundamental to high quality medical practice, and supports clinical effectiveness by promoting diagnostic accuracy, effective synthesis of clinical data, and efficient decision-making. This course draws upon medical knowledge that has been already learned in medical school curriculum to give students practice in developing habits of mind related to high-quality processing of a variety of medical, psychological, and social data related to the care of patients. The fundamental premise of the course is that humans use dual cognitive processes to make decisions, called "System 1" and "System 2". System 1 is based on pattern recognition and is fast and efficient, but potentially error prone. System 2 is based on deliberate consideration, and, while it is slower and less efficient, is more accurate. One system is not necessarily better than the other; whichever system is best for a particular case is dependent on a number of factors related to both the case and the person making the decision. High quality critical thinking, as taught in this course, is related to recognition of these factors, and appropriate "toggling" between System 1 and 2. This toggling function is enabled by five habits of mind that include curiosity, open-mindedness, intellectual humility, balanced skepticism, and metacognition. This course will introduce the concepts of System 1 and System 2 thinking and the cognitive toggling function between them, and will give students opportunities to define, explore, and practice the habits of mind. This will be achieved through activities that include 1) pre-session reading, reflection, and viewing of materials, 2) Interactive faculty facilitated discussion, and 3) collaborative group discussion of challenging clinical cases and board-style questions.

**Prerequisite:** Students must be enrolled as full- or part-time students in the undergraduate medical education program at the College of Medicine

#### HMN 716: Observation & Interpretation

2.5 Credits/Maximum of 2.5

Practicing good clinical medicine requires both keen observational skills and careful deductive reasoning. Identification of key pieces of data, recognition of patterns in the data gathered, and interpretation and reinterpretation of both data and patterns, are key components of medical decision-making.\* The purpose of this course is to emphasize the power and importance of observation and interpretation in the practice of medicine. As students prepare to work with patients, O&I provides the opportunity to begin developing competence in these areas without the fear of misdiagnosing or harming a patient. Here, learners will be challenged to refine their observational and analytical skills using works of art—mostly visual art and photography, but also brief writings—and to communicate their impressions and findings to others, a process similar to differential diagnosis. Unlike the goal of arriving at one "correct" answer in medicine, however, this course encourages multiple answers and interpretations. By exploring what various people experience in a piece of art, we come to understand that our own perspectives are limited. Not infrequently, listening to others' observations enables us to comprehend more completely and therefore interpret more accurately.

Ideally, experiencing the arts also leads to empathy for others, another fundamental goal of practicing medicine.

#### HMN 717: Humanities in Context (HIC)

2 Credits/Maximum of 2

The goal of HIC is to support the cultivation of humanistic sensitivity, which involves: - Noticing that there is a humanities issue - Adapting strategy and behavior to the humanities issue - Reflecting on the effectiveness of the strategy and behavior - Reorienting and reflecting to develop new approaches for the future Humanistic sensitivity involves looking outward toward professional practice and inward at one's own professional development. HIC is intended to be tightly connected to the care of patients; a practical, more so than theoretical, course. Toward this end, the concurrent organ system PBL cases will serve as the springboard for HIC learning most weeks. In this way, we will approach course topics through a single rich narrative description, and then zoom out to widen our view. The frame of the course is to apply humanistic sensitivity strategies to understand the experiences of the doctor and the patient within the societal context of medicine. Key themes for exploring these experiences will include: - Professional identity formation and wellbeing - Patient as person - Ethics - Critical Consciousness At the end of this course, we hope that you will be able to apply humanistic sensitivity in Clerkships and other educational settings to notice how a humanities issue is impacting providers, patients, or the clinical context, and then have some tools to begin to respond to it.

#### HMN 720: Developing your Interpersonal Skill Set Using Art and the Study of Stigmatized Populations

2.5 Credits/Maximum of 2.5

As physicians we treat patients who come from highly diverse and often unfamiliar backgrounds. We strive to be sensitive to each patient's needs and humane in our interactions. Using art and a selection of readings, this course seeks to hone the student's critical skills of observation - incorporating visual cues to help us to observe, hear and therefore understand our patients better. Class readings explore the integral role of cultural background and the many unique challenges that stigmatized populations often face. The readings are discussed and the student is encouraged to self reflect in order to recognize bias, advance their cultural humility and embrace an open approach to learning about others who might be different than ourselves. The readings may be modified to respond to each class' diverse interests. To introduce art analysis as a means of honing observational skills, the class takes a field trip to The Barnes Foundation in Philadelphia (virtual in 2021). Dr. Barnes' goal was to highlight the unique interrelationships of varied artists and a range of art forms. Dr. Barnes' unique perspective has been credited in part to his study of medicine - as the evaluation of a patient often requires us to weave together disparate elements and details to make a correct diagnosis.

#### HMN 723: Communications

3 Credits/Maximum of 3

This 12 week course during the second year of Phase I focuses on the application of verbal, nonverbal, and written communication skills in the context of patient care, team dynamics, and leadership. Communication builds on theoretical framework for communication skills presented in earlier humanities courses to help students construct a practical toolbox of skills as well as the opportunity for the application and rehearsal of skills in realistic patient-care related scenarios. There is heavy emphasis

on selfreflection and self-assessment in order to provide students with the skills necessary to improve their communication skills lifelong. During the course, students will progress through four modules: 1) Self, which focuses on self-assessment of internal bias, assumptions, and values, and how these individual characteristics impact the way we communicate as providers and team members, 2) Dyads, which is the most intensive portion of the course, and focuses on specific skills such as techniques for establishing rapport, nonverbal communication, silence, listening, asking/questions, and framing statements, 3) Teams, which expands the techniques and insights learned during modules 1 and 2 for application in scenarios involving interprofessional teams and families, and 4) Systems, which focuses on the role of good communication within a healthcare system, including a session on communication skills of effective leaders, and a case study that explores the impact of a patient-related communication breakdown on a health care institution. Each session may involve pre-reading, and will begin with a short large-group interactive session related to the day's topic. The majority of each session will be devoted to small group workshops facilitated by trained faculty during which students can apply skills to a standardized patient care scenario. Evaluation methods are detailed below. The course will be offered once annually during Phase I of the Undergraduate Medical education Curriculum.

**CONCURRENT:** Head/Neck Anatomy FPCC 723, NBS 723, SHS 721

HMN 741: Education for Physicians on End of Life Care (EPEC)

2.5 Credits

This course introduces the essential clinical competencies required to provide quality end-of-life care.

**Prerequisite:** This humanities elective course requires the student to have successfully completed Medical Humanities (Year I) and Ethics and Professionalism (Year II), as well as successful completion of all required third-year medical

HMN 742: Putting It Into Words: A Right-Brain Retrospective of Formative Moments in Medical School (PIW)

2.5 Credits

This creative writing workshop requires MS IVs to convey their reflections as medical students in a variety of genres which, collectively, result in a portfolio and publication.

**Prerequisite:** good standing as MS IVs

HMN 743: Graphic Medicine: Comics and Medical Narratives

2.5 Credits

In this course, students will explore the use of graphic storytelling (or Comics) as a medium for communicating medical narratives.

HMN 744: Humanities: Patients as Teachers, Students as Filmmakers Video Project: TheVideo Slam

2.5 Credits

This course teaches medical students about the full impact of illness and serious procedures on patients and their families.

**Prerequisite:** successful completion of third year of medical school

HMN 745: Medicine and Ethics Under Pressure

2.5 Credits

This course explores situational and systemic challenges to ethical behavior in biomedical research and the practice of medicine.

HMN 746: CAM and Integrative Holistic Medicine

2.5 Credits

This course presents current topics in Integrative Holistic Medicine and discusses the transition from Complementary and Alternative Medicine.

**Prerequisite:** successful completion of all third year core clerkships

HMN 747: The Medical Detective

2.5 Credits/Maximum of 2.5

Practicing good clinical medicine requires both keen observational skills and careful deductive reasoning - precisely the skills essential for any good detective. Identification of key pieces of data, recognition of patterns in the data gathered, and interpretation and reinterpretation of both data and pattern, are key components of medical decision-making. The purpose of this course is to emphasize the power of observation and interpretation in the practice of medicine. Using works from the whole spectrum of the fine arts (painting, music, writing, photography, dance, drama) students will challenge their observational and analytical skills and will communicate their impressions and findings to others, a process similar to developing a differential diagnosis of a patient's illness. Unlike the goal of arriving at one "correct" answer in medicine, however, this course encourages multiple answers and interpretations. By exploring what various people experience in a work of art, we come to understand that our own perspectives are limited. Occasionally, noting what is absent or not said is as important as what is readily observable. Listening to others' observations enables us to understand more completely and therefore interpret more accurately.

**Prerequisite:** Successful completion of phase II of the medical curriculum.

HMN 748: Controlling Human Heredity: Lessons From History

2.5 Credits

This course reviews the key steps in the development of our thoughts and practices relating to childbirth and medical genetics over the past 400 years.

**Prerequisite:** successful completion of all required 3rd year clerkships

HMN 749: Sufferers and Healers: Lessons From History

2.5 Credits

This course reviews the key steps in the development of medicine from its supernatural beginnings steeped in magic and religion through the creation of medical science.

**Prerequisite:** successful completion of all required 3rd year clerkships

## HMN 750: Creativity, Art, and Healing (CAH)

2.5 Credits

This course introduces students to the core components of the creative arts and healing.

**Prerequisite:** successful completion of all third year core clerkships

## HMN 751: The Narratives of Aging: Exploring Creative Approaches to Dementia Care

2.5 Credits

This course invites students to examine brain aging in an historical and cultural context, and contrast dominant reductionist understandings of dementia with a more humanistic, biopsychosocial model of care resurgent in recent years that places greater relative emphasis on the remaining strengths, capacities, and creativity of persons with dementia rather than focusing on deficits and losses.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 752: Chronic Disease and the Self

2.5 Credits

Utilizes published autobiographical patient narratives and live patient interviews to explore the impact of illness.

**Prerequisite:** successful completion of the first three years of medical school

## HMN 753: Finding 'Right' Answers: Solving Ethical Dilemmas in Medical Practice

2.5 Credits

At the end of the four weeks students will be equipped with four cognitive frameworks for thinking about and solving ethical issues in their clinical practice.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 754: The Practice of Virtue in Medicine

2.5 Credits

This course requires the student to study and recognize the great human virtues and to learn to practice virtue in medicine.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 755: Compassionate Surgical Care

2.5 Credits/Maximum of 999

This course, intended for students pursuing residency in surgically-based specialties, seeks to explore the interactions that occur between patient and surgeon, from both perspectives, through group discussions, simulated patient scenarios, real patient encounters, and assigned reading.

## HMN 756: Jazz and the Art of Medicine

2.5 Credits

This is a course that focuses on improving learners' patient-physician communication through building skill in improvisation.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 757: "Are You Listening?" Developing Effective Communication With Our Patients

5 Credits

Effective communication with patients is a vital skill for every physician. This course will delve into the interpersonal space between physician and patient.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 758: Documentary Filmmaking About Innovations in Patient Centered Care

5 Credits

Students make short documentary films about innovations that make care more patient centered.

**Prerequisite:** successful completion of all required 3rd year core clerkships

## HMN 759: Impressionism and the Art of Communication

2.5 Credits/Maximum of 2.5

This four-week Humanities Selective will be offered once a year during Phase-4, building on medical communication skills learned in earlier phases. Communicating effectively with patients is a critical skill necessary for physicians across all specialties. It is a competency that can be studied and learned, and then fine-tuned over time. Possessing techniques that facilitate good medical communication can increase patient satisfaction, reduce patient's mental and physical distress, and ultimately result in improved health of individuals and populations. Understanding the importance of providing the patient with space to tell their story can result in improved understanding and a more efficient diagnostic process. Recognizing the value of observation can increase a physician's sensitivity to patients and diagnostic clues. An awareness of preconceptions when caring for patients, especially those that are different from us, can help to guard against cognitive bias. In addition, appreciating different interactive styles can help physicians deal more effectively with a variety of challenging patients. The Impressionist Movement of the late 19th century created a novel approach to communication through painting that was distinct from accepted artistic standards of that time. This new painting style fostered a more open and less rigid approach to communication on the artist's canvas. It also embraced the art of observation in the natural setting, and in the process challenged the cognitive bias of that generation about what art had value and worth. The impressionists presented a challenging cadre of artists, each with their own communication style whose behavior was frequently a reflection of mental or physical illness, much like our patients demonstrate. As such, the painters that launched the Impressionist Movement over a century ago can provide a useful metaphor to study effective approaches to medical communication in the present. The course will consist of a Standardized Patient session

at the beginning and end of the course. This selective is delivered as six classes, each covering a different topic: Introduction to Painting as Communication, Structure vs. Space, The Art of Observation, Cognitive Bias, The Challenging Patient., and Reflection and Communication through Art. Dialogue on these topics is facilitated through the use of selected readings/film/ video, written assignments, team-based learning and pre-learning prior to class. Active learning is promoted through both individual and team-based painting exercises at University Park Campus and Penn State School of Visual Art, and observational exercises at Penn State University's Palmer Museum of Art. Two interactive presentations by a Penn State professor of Art History help to ground students in understanding the Impressionist Movement and sets the stage to compare communication through art and medical communication with patients.

HMN 760: Viewing Translational Genomics Through an Ethical, Legal/ Policy, Social Implications (ELSI) Lens

2.5 Credits/Maximum of 2.5

This Humanities selective is designed for students interested in exploring the ethical, legal/policy, social implications (ELSI) of Translational Genomics. Translational genomics is a broad term that generally applies to the process of moving genomic science and technologies from the research laboratory into the clinical and public health domains. In the context of this course, it also refers to the use of emerging, novel (e.g. 'cutting edge') science in the clinic and for public health purposes. Genetics and genomics are rapidly entering the clinic and public health as tools not just for single gene conditions and rare conditions. In addition, the increased availability of one's genomic information has led to its secondary use in the legal system (e.g. forensics), search for family members, and determining family ancestry. Over the last several decades, ethicists, legal scholars, and social scientists have written and commented on the challenges in genetic research and translating new genetic technologies and research findings in these various domains, and with the increased access to genomic information, examining the different policy and social issues that arise continues to be important so as to facilitate ethical and responsible use of the technology.

**Prerequisite:** Successful completion of Phase II.

HMN 761: Literature, Medicine, and Culture

2.5 Credits/Maximum of 2.5

Literature, Medicine, and Culture provides students with an opportunity to consider contemporary medicine and treatment in relation to historical experiences, ideas, and imagination. Course readings explicitly pose questions about the present in relation to the past, the challenges of modern therapeutics and how they affect enduring ideas about human nature, and the experience of illness from the patient perspective. Students will build on their Humanities and Systems knowledge base concerning the cultural contexts of illness, treatment, and care. Course content varies according to instructor expertise and topic selection. Students who complete the course will increase their knowledge about medical history and the patient experience, imaginative portrayals of illness and health, and societal approaches to disease and disability. They will be able to identify rhetorical features of disease narratives and historically consistent elements of human experience of illness. In addition, students will enhance skills in reading, interpretation, and analytic writing, as well as observational skills. Classroom discussion and informal assignments help students develop sophisticated understanding of medicine and human experience in context, training them to think critically and in complex ways about the human experience of health and

illness, and to represent their developing ideas in written assignments and/or creative projects. Other elements of health humanities learning, such as consideration of professional identity formation and ethics, may be included in course content.

HMN 762: Art as Self Care

2.5 Credits/Maximum of 2.5

The purpose of this fourth-year humanities selective is to explore how healthcare trainees can engage with the arts in ways that promote self-care. Instead of spending one month having students read and talk about how they can use the arts for self-care, we challenge them to take a year and actually do it. This course is for all levels of artists-there is no expertise, past experience, or special talent required. This course is open to Hershey and UP students.

**Prerequisite:** Successful completion of Phases I and II

HMN 763: A History of Medicine with Contemporary Application for Personal and Professional Development

2.5 Credits/Maximum of 2.5

This course will progress in a linear fashion through the historical context of the development of medicine as a profession. The sessions will be themed and include such transitions as the professional journey from description to scientific method, from priest to clinician, and from low to high patient expectations. Illustrations will include the life and contributions of historical figures beginning with Hippocrates and Galen. Student facilitated discussion will be directed toward identification of parallels between historical and modern-day applications. Students will be asked to reflect on comparisons between past and present practice philosophy, patient relationships, and end goals of the healing process. The class will engage in the study of historical text and personalities to prepare students for their own continuing professional development. A reflective paper from each student on a topic of choice will be shared in group discussion during the last session.

**Prerequisite:** Successful completion of phase II of the medical curriculum.

HMN 796: Individual Studies

1-15 Credits/Maximum of 15

Studies outside the scope of formal courses, supervised on an individual basis.

**Prerequisite:** permission of department chairman

HMN 797: Special Topics

1-6 Credits/Maximum of 6

Formal courses given on a topical or special interest subject which may be offered infrequently.

## Integrated Science (INTSC)

INTSC 733: Integrated Science

2 Credits/Maximum of 2

As medical education and practice evolves, students and physicians must be able to recognize and apply basic science concepts to solve



complex medical problems, providing safe and effective patient care and prevention of harmful outcomes. The integration of medical sciences (basic, clinical, systems science) with a humanistic approach in their medical decision making is a life-long skill for the future physician. As students approach integrated critical thinking regarding medical problems, they must also consider humanistic integration. The integrated science course will provide students with an interactive opportunity to discuss basic sciences and humanities with relevance to clinical medical practice. The overall objective of the course is for students to formulate critical thinking skills through the application of medical sciences for clinical problem solving. The course objectives include: - Evaluate complex clinical problems using an integrated, multi-system approach by using basic, systems and clinical science knowledge - Explain the importance of basic sciences in the pathophysiology, diagnosis, prevention, and treatment of disease, as well as the general approach to clinical patient care - Use scientific and medical literature as evidence based rationale for advanced problem solving - Formulate problem solving strategy and apply critical thinking in a team oriented setting - Evaluate and reflect upon humanistic care and the relevance of humanities during clinical experiences and patient encounters. This longitudinal course will be offered during Phase II\* and provide a humanities thread within Phase II curriculum. Assessment will be Pass/Fail and determined by performance on session quizzes and student derived case creations. This course will be offered once each year and all students in Phase II will be enrolled.

## Medical Clerkship Island - MD (MCLKS)

MCLKS 701: Advanced Clinical Diagnostics

1 Credits

Advanced instruction for third-year medical students in laboratory medicine, neurology, ophthalmology, radiology and motivational interviewing.

**Prerequisite:** Successful completion of the second year of medical school.

MCLKS 702: Clinical Therapeutics

1 Credits

Skill development: discussion of end of life issues; pain management; clinical pharmacology including use of antibiotics, nutrition, cost of medical care and reducing medical errors.

**Prerequisite:** Successful completion of the second year of medical school. Successful completion of MCLKS701

MCLKS 704: Improving Healthcare

1 Credits

Skill development: discussion of end of life issues; pain management; medical literature evaluation; effective utilization and improvement of medical systems.

**Prerequisite:** Successful completion of the third year of medical school. Successful completion of MCLKS701 , MCLKS702 and

## Medical Ethics Professionalism (MEP)

MEP 721: Medical Ethics and Professionalism

1-3 Credits

This course provides an introduction to bioethics and professionalism and provides a framework for understanding ethical issues in medicine.

**Prerequisite:** successful completion of year one of the medical school curriculum; Concurrent: CAR 722, REN 728 , PLM 726 , GI 729

## Medical Home Curriculum (MHC)

MHC 797: Medical Home Longitudinal Curriculum - Pilot

2 Credits

Medical Home Longitudinal Curriculum (3rd year pilot course).

**Prerequisite:** successful completion of the first and second year medical school curricula.

MHC 797A: Medical Home Longitudinal Advanced Elective

5 Credits

The Medical Home Longitudinal Advanced Elective will provide continuity experiences for students to learn and witness the natural progression of illnesses, develop treatment options over time in a team format, as well as develop empathetic healing relationship with patients.

**Prerequisite:** successful completion of the first three years of medical school curriculum. Approval from student's faculty advisor.

## Medical Triage and Resuscitation (MEDTR)

MEDTR 743: Triage and Resuscitation

5 Credits

This course provides knowledge and skills necessary for recognition and initial management of the patient with a potentially life-threatening illness or injury.

**Prerequisite:** successful completion of the core third-year medicine and surgery rotations.

## Medicine - MD (MED)

MED 700: Clinical Clerkship in Medicine

15 Credits/Maximum of 15

To provide supervised clinical experience in the management of patients with acute and chronic illness.

**Prerequisite:** restricted to medical students who have completed required preclinical training

## MED 715: Clinical Elective in Infectious Disease

5-10 Credits/Maximum of 10

Principles of human-host defense mechanism, host-parasite interactions, manifestations of various infections, systematic approach to problem solving, rational use of antibiotics.

**Prerequisite:** third-year core clerkships and permission of staff

## MED 721: Cardiology Elective for 3rd Year Students

5 Credits/Maximum of 5

Students learn non-invasive and invasive cardiology procedures, then work as clinical clerks on an in-patient cardiology service.

**Prerequisite:** successful completion of the first two years of medical school

## MED 722: Medicine Acting Internship

5 Credits/Maximum of 5

Active participation on an advanced level in the diagnosis and management of patients admitted to the General Internal Medicine Services. More responsibility for decision-making and patient management is afforded subinterns than clinical clerks.

**Prerequisite:** successful completion of 3rd year core clerkships.

## MED 723: Clinical Elective in Gastroenterology

5-15 Credits/Maximum of 15

A program in clinical gastroenterology to expose student to basic GI physiology, pathophysiology, and management of gastrointestinal and liver problems.

**Prerequisite:** basic core clerkships

## MED 724: Clinical Elective in Hematology

5-15 Credits/Maximum of 15

Provides students with the basic understanding of the fundamental problems of hematology.

**Prerequisite:** third-year medicine core clerkship

## MED 725: Clinical Elective in Medical Oncology

5-15 Credits/Maximum of 15

Introduces students to cancer chemotherapy and immunotherapy with emphasis on workings of lymphoma and solid tumor patients.

**Prerequisite:** third-year medicine core clerkship

## MED 727: Elective in Pulmonary Medicine

5-15 Credits/Maximum of 15

A clinical program in pulmonary medicine with emphasis in pulmonary physiology, pathophysiology, and patient diagnosis and management.

**Prerequisite:** basic third-year core clerkships

## MED 728: Clinical Program in Nephrology

5-10 Credits/Maximum of 10

Problems in clinical nephrology with emphasis placed on a pathophysiologic approach. Introduction to renal biopsy, peritoneal dialysis, and hemodialysis.

## MED 729: Clinical Program in General Internal Medicine

5-15 Credits/Maximum of 15

Introduction to the variety of illnesses and problem-solving techniques of the general internist.

## MED 733: Cardiology Acting Internship

5 Credits/Maximum of 5

Advanced training in cardiovascular pathophysiology and diseases for fourth-year students functioning as acting interns.

**Prerequisite:** third-year core clerkships

## MED 734: Clinical Elective in Endocrinology

5-15 Credits/Maximum of 15

Expose students to a large number of clinical endocrine problems, familiarize them with diagnostic laboratory procedures used in evaluating patients.

**Prerequisite:** basic core clerkships

## MED 736: Clinical Management of Obesity

5 Credits

This course provides exposure to the multifaceted area of obesity management, including diabetes, bariatric surgery, medical management and pediatrics

**Prerequisite:** successful completion of any third year course which includes direct patient care; permission of instructor required (email Dr. Boan or Dr. Ku); or successful completion of second year medical school at Penn State University Coll

## MED 737: Clinical elective in Rheumatology

2.5 Credits/Maximum of 2.5

The Clinical Rheumatology elective is a TWO-week course that is designed to cover the rheumatologic conditions that are most germane to any practitioner. The course will provide an introduction to common and some less common diseases that affect the joints and systemic immune system. This course is focused on those conditions that should be known by practitioners in any field. Course material will be presented in the form of bedside teaching in the clinic and on inpatient consultation rounds, weekly teaching sessions with other trainees, conferences with faculty, and readings from textbooks and online learning modules. Central themes of the course are recognition and diagnosis of these diseases, use and interpretation of diagnostic tests and familiarity with major rheumatologic therapeutics. Students will be expected to be able to generate a differential diagnosis for patients being evaluated in clinics or on inpatient consultation rounds.

**Prerequisite:** Participation in an accelerated pathway

## MED 738: Clinical Elective in Cardiology–Consultation Service

5 Credits/Maximum of 5

Students evaluate and follow in-patients on general non-cardiology services with cardiac problems referred to the Cardiology Consult Service.

**Prerequisite:** satisfactory completion of the Third Year Medicine Core Clerkship

## MED 742A: Allergy and Immunology Clinical Elective for 3rd Year Students

2.5 Credits/Maximum of 2.5

Allergy and Immunology Clinical Elective for 3rd year students.

**Prerequisite:** permission of instructor

## MED 745: Geriatric Elective

5 Credits

Students will perform assessments and develop care plans for hospitalized elders who are transitioning to home or long-term care setting.

**Prerequisite:** successful completion of all required clerkships

## MED 747: Pediatric Allergy, Asthma and Immunology Elective

5 Credits/Maximum of 5

This course provides exposure to basic concepts for diagnosis and management of children and adults with allergic and immunologic diseases and respiratory and cutaneous abnormalities. MED 747 Clinical Elective in Allergy, Asthma and Immunology (5) The fourth year student rotating on the allergy service will experience an active and up to date Allergy and Immunology clinical service. Diseases you will be managing include allergic skin disorders, asthma, sleep, rhinitis, sinusitis, primary immunodeficiencies, recurrent infections, drug, food and insect allergy, and anaphylaxis. Developing an excellent history to include occupational, environmental and travel history will be facilitated. The student will be able to participate as an active member of the clinic and will have responsible for the patient. We anticipate that you will act as an intern and will manage the patient completely from start to finish. Clinic hours are daily 8 AM to 5 PM except Weds AM which is our academic time. In addition, to clinic there is an opportunity to participate in inpatient consults; however, the majority of time (90%) will be spend in the clinic seeing patients. Techniques include skin biopsy, skin test, patch testing, spirometry, and patient education and there will be ample opportunity to practice these techniques. Most of the education is done bedside during the patient's visit. Lastly, we expect that the student will present a short power point presentation, develop a manuscript or participate in research if time permits.

**Prerequisite:** successful completion of the 3rd year required clerkships Cross-listed with: PED 747

## MED 748: Adult Rheumatology Elective

5 Credits

This course provides exposure to concepts utilized in the diagnosis and management of rheumatic diseases in adults. MED 748 Adult Rheumatology Elective (5) This course is designed to introduce fourth

year medical students to the basics of evaluation and management of adults with musculoskeletal disease with an emphasis on diagnosis and treatment of inflammatory and non inflammatory arthritis. This primarily outpatient experience will build on the concepts presented during the second year didactic course in MSK medicine that dealt with rheumatology topics as well as the Island I MSK portion which utilized physical diagnosis skills related to musculoskeletal joint evaluation. Students on this elective will serve as an integral part of the team and will be the first contact with returning and new patients in the outpatient clinic setting having had a chance to interact one on one with patients in order to practice history taking and exam skills. Students will then present the information to the attending physician where management and treatment options will be discussed. Pertinent physical exam and radiographic findings will be noted and technique for joint aspiration and injection will be demonstrated in the appropriate patients. Students will be expected to demonstrate evidence of independent reading on rheumatology topics and preparation of case based presentations for weekly conferences. Opportunities for interested students to participate in pediatric rheumatology clinics are also available during this time. The overall goal of this elective is to allow students to attain the basic skills and knowledge necessary for the initial evaluation and diagnostic work up of common presenting musculoskeletal complaints in the primary care outpatient and in-patient settings. Emphasis will be placed on pathophysiology, differential diagnosis, physical exam findings and management options as well as the essential portions of the history and physical exam. Students will be encouraged to practice their musculoskeletal exam skills under supervision in order to become proficient by the end of the four week elective. Evaluation methods will include a pre-test and post-test as well as subjective evaluation of students' fund of knowledge and patient care skills by the attending rheumatology faculty. This course will be offered throughout the entire academic year.

**Prerequisite:** completion of all of the third year core clerkships

## MED 749: Medical Intensive Care Acting Internship (4th year)

5 Credits/Maximum of 5

Senior students assume Acting Intern responsibilities for Medical ICU level patients. This intense training is recommended for highly motivated students interested in a "hands-on" experience in the critical care unit.

**Prerequisite:** successful completion of third year core clerkships.

## MED 757: Hematology-Oncology Subinternship

5 Credits/Maximum of 5

Students will function as acting interns in the inpatient hematology/ oncology unit under the direction of senior housestaff fellows and faculty.

**Prerequisite:** third-year core clerkships

## MED 796: Medicine Individual Studies

5 Credits/Maximum of 5

Clinical or laboratory research on a selected topic by special arrangement with member of faculty who will act as preceptor.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for prior approval before registering for this course.

MED 796A: Medicine Individual Studies for 3rd Year

2.5 Credits

Medicine individual studies for 3rd year.

MED 797: Medicine Special Topics

5 Credits

Advanced clinical training in internal medicine or subspecialty  
–neurology, cardiology, clinical pharmacology, hematology,  
gastroenterology, endocrinology, pulmonary medicine, renal disease.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

MED 797A: Cardiorespiratory

4 Credits

Cardiorespiratory

MED 797B: Reproductive Medicine/Endocrinology

6 Credits

Advanced clinical training in internal medicine or subspecialty  
–neurology, cardiology, clinical pharmacology, hematology,  
gastroenterology, endocrinology, pulmonary medicine, renal disease.

MED 797D: Profession of Medicine II

2 Credits

Advanced clinical training in internal medicine or subspecialty  
–neurology, cardiology, clinical pharmacology, hematology,  
gastroenterology, endocrinology, pulmonary medicine, renal disease.

MED 797E: Translating Health Care Science

1 Credits

Advanced clinical training in internal medicine or subspecialty  
–neurology, cardiology, clinical pharmacology, hematology,  
gastroenterology, endocrinology, pulmonary medicine, renal disease.

## Musculoskeletal Medicine - MD (MSC)

MSC 727: Musculoskeletal Medicine

3 Credits

Interdisciplinary - Medical Education

**Prerequisite:** successful completion of MS Year I

## Musculoskeletal System (MSK)

MSK 723: Musculoskeletal System

1-2 Credits

Course covers key concepts of anatomy, embryology, histology, biochemistry, physiology, pathology, pharmacology, and clinical medicine of bone, joint, and connective tissues.

**Prerequisite:** must have successfully completed all course work in the first year of medical school

MSK 740: Clinical elective in Musculoskeletal Infectious Disease

2.5 Credits/Maximum of 2.5

The Clinical MSK infectious disease elective is a two-week course that is designed to cover the infectious conditions that should be known by any practitioner, as well as the orthopaedic surgeon. The course will provide an introduction to common and some less common diseases that affect the joints, long bones, soft tissues, orthopaedic implants, and infections unique to the diabetic. Course material will be presented in the form of bedside teaching in the clinic and on inpatient consultation rounds, weekly teaching sessions with other trainees, conferences with faculty, and readings from textbooks and online learning modules. Central themes of the course are recognition and diagnosis of these diseases, use and interpretation of diagnostic tests and familiarity with antibiotic therapeutics. Students will be expected to be able to generate a differential diagnosis for patients being evaluated in clinics or on inpatient consultation rounds.

**Prerequisites:** Participation in an accelerated pathway in Orthopedics or Family Medicine

## Neural and Behavioral Science (NBS)

NBS 723: Neural and Behavioral Science

1-2 Credits

This course is a multidisciplinary introduction to the human nervous system that integrates both basic sciences and clinical disciplines.

NBS 725: Neural and Behavioral Science

13 Credits

Organized around the neural and behavioral sciences; builds on Year I knowledge.

**Prerequisite:** BBD 716 , CMBMP711 , CMBMP712 , SBMP 715

## Neuroscience - MD (NEURO)

NEURO 740: Clinical Neuroscience Clerkship

5 Credits/Maximum of 5

The Clinical Neuroscience (CNS) Clerkship is a four-week or equivalent (i.e. longitudinal integrated clerkship) required clerkship designed to expose medical students to a wider array of neurological conditions than can be adequately covered in a traditional clinical neurology clerkship. The clerkship emphasizes an adult neurology experience which is achieved through immersion on an inpatient neurology service (general inpatient neurology or stroke inpatient service). The immersion into adult neurology is supplemented by additional selectives that students choose based upon their individual interests while meeting core learning objectives of the clerkship: 1. A 2-week selective in neurosurgery or neurosurgery + neurocritical care enhances students' exposure to brain, spine and peripheral nerve trauma; back and neck pain; intracranial (subarachnoid and intracerebral) hemorrhage; nervous system tumors; functional neurosurgery; the surgical management of epilepsy; and surgical pediatric/congenital nervous system disorders; 2. A 1-week selective in pediatric neurology exposes them to a variety of medical

pediatric/congenital nervous disorders; 3. A 1- or 2-week outpatient neurology selective provides a broad exposure to a variety of adult neurological disorders managed in an outpatient clinic setting; 4. A 1-week stand-alone neuroscience critical care selective provides exposure to the critical care management of patients with severe neurological disorders, including treatment of status epilepticus, intracranial hypertension, and acute spinal cord injuries, and evaluation of the patient in coma; and 5. A 1-week selective in PM&R provides exposure to the functional evaluation of neurological disorders and the interprofessional rehabilitative management of patients recovering from acute neurological disorders and those with chronic neurological disease.

**Prerequisite:** Successful completion of Phase I Medical Student courses

NEURO 741: Neurology Acting Internship

5 Credits

The Neurology AI will provide an advanced training in neurological evaluation, diagnosis and treatment in inpatient setting. Students will follow patients at the level of an intern, including admission, diagnostic work up, interdisciplinary team meetings, family discussions, documentation, discharge planning and brief outpatient follow up. Students will follow up on studies (including EMG and EEG) and will perform a lumbar puncture and will perform a formal case presentation.

**Prerequisites:** Successful completion of Phase I and II

NEURO 796: Neurology Individual Studies

5 Credits/Maximum of 5

Neurology individual studies.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must meet with course director for approval prior to registering for course.

NEURO 797: Neurology Special Topics

5 Credits/Maximum of 5

Neurology Special Topics.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for this course.

## Neurosurgery (NSURG)

NSURG 750: Neurosurgery Acting Internship

5 Credits/Maximum of 5

Neurosurgery Acting Internship.

**Prerequisite:** successful completion of 3rd year core clerkships - students should contact course director prior to registering

NSURG 750A: Neurosurgery Elective for 3rd Year Medical Students

2.5 Credits/Maximum of 2.5

Neurosurgery Elective for 3rd Year Medical Students.

**Prerequisite:** successful completion of one third year core clerkship

NSURG 751: Neurocritical Care Acting Internship

5 Credits/Maximum of 5

The Neurocritical Care AI provides students advanced training in the diagnosis and management of critically ill patients with severe neurological disorders and following neurosurgical operative procedures, who are cared for in the specialized Neurocritical Care Unit. Students will learn management strategies for various neurological disorders such as ischemic and hemorrhagic stroke, aneurysmal subarachnoid hemorrhage, traumatic brain and spinal cord injury, brain and spinal cord tumors, neurological infections, hydrocephalus and related CSF disorders, epilepsy, movement disorders and deep brain stimulation, and genetic, inflammatory, toxic/metabolic, nutritional, and degenerative neurological conditions. Students will also learn management strategies for neurological emergencies such as increased ICP, status epilepticus, shock, and respiratory failure. Students will gain technical experience performing bedside procedures such as intubation, line insertions, lumbar punctures, and intracranial pressure monitor and external ventricular drain insertions. Students will assume the comparable role of a PGY 1 resident, and will work collaboratively with the Neurocritical Care Unit interdisciplinary team and other healthcare professionals in the management of their patients, with discharge planners and others in preparation for transfer, and with patients and families. Students will attend required neurosurgery and neurology conferences.

**Prerequisite:** Successful completion of Phase I and II

NSURG 796: Neurosurgery Individual Studies

5 Credits/Maximum of 5

Neurosurgery Individual Studies.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course

NSURG 797: Neurosurgery Special Topics

5 Credits/Maximum of 5

Neurosurgery Special Topics.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## Obstetrics and Gynecology - MD (OBGYN)

OBGYN 700: Obstetrics and Gynecology

10 Credits/Maximum of 10

Required clerkship providing supervised clinical experience in obstetrics and gynecology.

**Prerequisite:** limited to medical students who have completed preclinical courses

OBGYN 701: OBGYN Externship/Subinternship

5 Credits

An elective to provide advanced clinical experience involving community hospital OB/GYN, ambulatory OB/GYN, or selected subspecialties.

**Prerequisite:** third-year core clerkships

OBGYN 710: Clinical Gynecologic Oncology

5 Credits/Maximum of 5

Active participation in evaluation and management of patients with gynecologic malignancies.

**Prerequisite:** completion of third-year clerkship

OBGYN 720: Ambulatory and Adolescent Gynecology Elective

5 Credits/Maximum of 5

This course involves active participation in a community outpatient obstetric and gynecology practice.

**Prerequisite:** completion of third year core clerkships

OBGYN 720A: Reproductive Endocrinology & Infertility Elective

2.5 Credits

This course provides exposure to basic concepts of diagnosis and management of infertility, and of reproductive endocrinologic disorders of women including hyperandrogenicity and anovulation. OBGYN 720A Reproductive Endocrinology & Infertility Elective (2.5) This course is designed to introduce third year medical students to the basic evaluation of human infertility, and expose them to current technologies for addressing the problem. Additionally, students will be introduced to clinical reproductive endocrinology in women, including the underlying biochemical and hormonal basis of normal function, and the recognition and management of common disorders. This will include exposure to genetic and clinical research, and the interplay between what are seen as reproductive endocrine disorders and broader human endocrinology. Experiences will include participation in infertility clinics, endocrinology clinics, vaginal ultrasound sessions, and egg retrieval and embryo transfer procedures.

**Prerequisite:** successful completion of any third year core clerkship course, and signed approval by the course director

OBGYN 721: Clinical Endocrinology/Infertility

5 Credits/Maximum of 5

Active participation in evaluation and management of outpatient/ endocrinology/ infertility problems.

**Prerequisite:** completion of third-year clerkships

OBGYN 722: Clinical Perinatal Medicine Elective

5 Credits/Maximum of 5

Management of women with pregnancies complicated by maternal and/or fetal disease will be learned in a high-risk pregnancy environment.

**Prerequisite:** third-year core rotation in obstetrics and gynecology

OBGYN 722A: Perinatology Elective

2.5 Credits

This course provides exposure to basic concepts of management of high risk pregnancies and medical complications of pregnancy. OBGYN 722A Perinatology Elective (2.5) This course is designed to introduce third

year medical students to the basic concepts of high risk obstetrics, and expose them to current technologies for monitoring fetuses and diagnosing prenatal disorders. They will review the human physiologic adaptations of pregnancy, and understand the relevance to everyday clinical situations. They will be exposed to genetic counseling, screening, and diagnosis, including the ethical impact of current knowledge and technologies. Finally, they will be exposed to the impact of pregnancy on systemic disorders, such as hypertension, and the impact of those disorders on the health and development of the fetus.

**Prerequisite:** successful completion of any third year core clerkship course, and signed approval of the course director

OBGYN 796: OB/GYN Individual Studies

5 Credits/Maximum of 5

A forum for collaborative research on an individual basis in areas of obstetrics and gynecology, including reproductive biology and endocrinology.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

OBGYN 796A: OB/GYN Individual Studies for 3rd Year

2.5 Credits

OBGYN individual studies for 3rd year.

OBGYN 797: OB/GYN Special Topics

5 Credits/Maximum of 5

Formal courses given on a topical or special interest subject which may be offered infrequently.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## Ophthalmology (OPHTH)

OPHTH 760: Ophthalmology Elective

5 Credits/Maximum of 5

This course is designed to provide a broad experience in ophthalmology for any students, regardless of their future career goals.

**Prerequisite:** Third Year Core Clerkship

OPHTH 761: Clinical Ophthalmology Elective - Brief

2.5 Credits/Maximum of 2.5

The Clinical Ophthalmology Elective-Brief is a 2-week course that is designed to cover the eye conditions that are most commonly encountered by a general practitioner. The course goal is for students to understand the diagnosis, pathogenesis, and management of a variety of common ophthalmic disorders, as well as become proficient in the use of a direct ophthalmoscope. Typically, students will have the opportunity to rotate through all subspecialties (Anterior Segment and Cataract, Cornea and External Disease, Glaucoma, Neuro-ophthalmology, Oculoplastics and Orbit, Pediatric Ophthalmology, Retina), as well as to participate in the Urgent Care and In-House Consultation Services. This course provides an introductory experience in ophthalmology for any student, regardless of their future career goals. In addition, the schedule can be modified

to accommodate particular interests, such as clinical neurosciences, pediatrics, and emergency medicine.

**Prerequisites:** Successful completion of Phase I

OPHTH 796: Ophthalmology Individual Studies

5 Credits/Maximum of 5

Ophthalmology Individual Studies

**Prerequisite:** successful completion of 3rd year core clerkships

OPHTH 796A: Ophthalmology Individual Studies 3rd Year

2.5 Credits

Ophthalmology Individual Studies for Year 3 Medical Students.

**Prerequisite:** successful completion of one 3rd year core clerkship

OPHTH 797: Ophthalmology Special Topics

5 Credits/Maximum of 5

Ophthalmology Special Topics

**Prerequisite:** successful completion of 3rd year core clerkships

## Orthopaedics (ORTHO)

ORTHO 710: Adult Orthopaedics for Third Year Students

5-15 Credits/Maximum of 15

An in-depth experience in general adult orthopaedics that can be tailored for students interested in orthopaedics or in primary care.

**Prerequisite:** Third Year Core Surgery Clerkship

ORTHO 711: Pediatric Orthopaedics for Third Year Students

5 Credits/Maximum of 5

An in-depth experience in pediatric orthopaedics that can be tailored for students interested in orthopaedics or in primary care.

**Prerequisite:** Third Year Core Surgery Clerkship

ORTHO 730: Adult Orthopaedics Acting Internship

5 Credits/Maximum of 5

An in-depth experience in general adult orthopaedics that can be tailored for students interested in orthopaedics or in primary care.

**Prerequisite:** Third Year Core Clerkship

ORTHO 731: Pediatric Orthopaedics Acting Internship

5 Credits/Maximum of 5

An in-depth experience in pediatric orthopaedics that can be tailored for students interested in orthopaedics or in primary care.

**Prerequisite:** Third Year Core Clerkship

ORTHO 740: Rehabilitation Medicine Elective

5 Credits

An in-depth experience in rehabilitation medicine providing clinical experience in both the outpatient clinics and the inpatient unit.

**Prerequisite:** successful completion of the medicine clerkship. 3rd or 4th year students may register for this course.

ORTHO 741: York-Orthopedic Sports Medicine Elective 3rd or 4th Year Elective

5 Credits

Course provides 4 week exposures to basic concepts for diagnosis and management of sports related injuries and conditions.

**Prerequisite:** successful completion of all the pre-clinical courses within Years I & II

ORTHO 741A: York-Orthopedic Sports Medicine Elective (3rd Year)

2.5 Credits

Course provides 2 week exposure to basic concepts for diagnosis and management of sports related injuries and conditions

**Prerequisite:** successful completion of all the pre-clinical courses within Years I & II

ORTHO 796: Orthopaedics Individual Studies Elective

5 Credits/Maximum of 5

Creative projects including non-thesis research supervised on an individual basis and which fall outside the scope of formal courses.

**Prerequisite:** limited to students enrolled in the Penn State College of Medicine

ORTHO 797: Orthopaedics Special Topics Elective

5 Credits/Maximum of 5

Formal courses given on a topical or special interest subject which may be offered infrequently and/or offered off-campus.

**Prerequisite:** Third Year Core Clerkship

## Pathology - MD (PATH)

PATH 770: Anatomic Pathology

1-15 Credits/Maximum of 15

Study of tissues received daily by the surgical pathology laboratory. Students will assist in and then perform autopsies under supervision.

PATH 796: Pathology Individual Studies

5 Credits/Maximum of 5

Creative projects including nonthesis research, supervised on an individual basis and which fall outside the scope of formal courses.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## PATH 797: Pathology Special Topics

5 Credits/Maximum of 5

Formal courses given on a topical or special interest subject which may be offered infrequently; several different topics may be taught in one year or term.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for this course.

## Patients and Sciences (PS)

## PS 711: PATIENTS AND SCIENCES - COURSE 1

21 Credits/Maximum of 21

PS1 initially immerses students as contributing participants in primary care practices as patient navigators. Authentic patient -based experiences provide the springboard context for learning through small group (Inquiry or "IQ") discussions, expert tutorials, and independent study, guided by experienced educational mentors. PS1 encompasses these core components: - Patient Navigators: Students will immerse in specific community practice sites 3-4 half-days/week under the supervision of both a physician and a care manager. This on-site mentor team will help students to identify and navigate for patients in need of extra attention/communication or with barriers to care. - Inquiry Groups (IQ Groups): Students will meet in small (5-7 students) IQ groups at least 10-12 hours/week to share patient stories, focus questions for exploration, and develop learning objectives encompassing the four pillars of the PSU-COM curriculum - Basic Science, Clinical Science, Health Systems Science, and Humanistic Care. The initial weekly session will focus on patient stories and development of case-based learning goals and objectives. Students will research these objectives for subsequent discussions in Wednesday and Friday IQ sessions. Patient cases will be chosen based on student interest and the degree to which they complement and extend prior learning (see mapping and tracking below). The students will also be assigned a formative weekend assignment based weeks' experiences to synthesize learning from the previous week. These assignments are reviewed on Monday and the IQ cycle begins again. - Integrated clinical skills and anatomy (emphasizing Hypothesis-Driven Diagnostic Learning-HDDL): Time will be devoted each week to clinical skills and related anatomy from patient cases the students have encountered.. - Collaborative Science Tutorials (CST): Based on the model used at Oxford University (see Glossary), the CST will leverage the subject matter expertise available at University Park and Hershey to explore learning objectives identified (by students and faculty) in the IQ Groups as areas of weakness or insufficient coverage. - Assessment: Formative and summative assessment activities have been specifically designed to support active learning, self-assessment, and skills in critical and systems thinking. - Mapping and Tracking: Learning objectives derived from IQ Groups and Collaborative Science Tutorials, self-study, and assessment feedback will be mapped to PSU-COM competencies and sub-competencies scaffolded by the Calgary model of patient presentations (see Glossary). These markers of professional development will be addressed in Portfolio reflections and reviewed with faculty mentors to identify gaps and focus areas for future learning.

**Prerequisite:** Successful admission to the COM & University Park Program

## PS 712: PATIENTS AND SCIENCES - COURSE 2

21 Credits/Maximum of 21

PS-2 builds on navigational immersion from PS-1 to allow students increasing responsibilities as longitudinally contributing participants in primary care health teams. Authentic patient -based experiences provide the context for learning through small group inquiry (IQ) discussions, Collaborative Science Tutorials, and independent study, guided by experienced educational mentors. PS-2 core components: - Practice Immersion: Students will participate in specific community practice sites 3 half-days/week under supervision. - Inquiry Groups (IQ Groups): Students will meet in small (5-7 students) IQ groups at least 10-12 hours/week to share patient narratives, develop questions for exploration and develop learning objectives encompassing the four pillars of the PSU-COM curriculum - Basic Science, Clinical Science, Health Systems Science, and Humanities. The process will continue in a fashion similar to PS-1. Initial weekly sessions focus on patient summaries in order to develop shared case-based goals and learning objectives. Students research the shared objectives for discussion in Wednesday and Friday IQ sessions. Patient cases will be chosen to complement and extend the depth and breadth of learning initiated in PS-1. The students will also engage in formative, integrative critical thinking activities on Tuesday afternoons to enhance learning. - Integrated clinical skills (emphasizing Hypothesis-Driven Diagnostic Learning-HDDL): Time will be devoted to clinical skill development, building on the scaffold from PS-1. - Collaborative Science Tutorials (CST): The CST will take on an expanding role in PS-2. Based on mapping of objectives from PS-1, identified gaps and areas requiring deeper coverage form the substrate for small group sessions facilitated by subject matter experts from University Park and Hershey. Collaborations with Eberly College of Science, the College of Health and Human Development, the College of Liberal Arts and the College of Arts and Architecture have been established. PSU will build on PS1 learning objectives and continue the mapping process to align with PSU COM core content. - Assessment: Formative and summative assessment activities will be similar to PS-1 and are designed to support active learning, self-assessment, and skills in critical and systems thinking. - Mapping and Tracking: Learning objectives derived from IQ Groups and Collaborative Science Tutorials, self-study, and assessment feedback will continue to be mapped to PSU-COM competencies and sub-competencies and PSU core content. These markers of professional development will be addressed in Portfolio reflections and reviewed with faculty mentors to identify gaps and focus areas for future learning.

**Prerequisites:** Successful completion of Patients and Sciences -1 (PS1 711)

## PS 723: PATIENTS AND SCIENCES - COURSE 3

16 Credits

PS3 is an integrative course designed to complement the experience of the Longitudinal Integrated Clerkship(s) and continue the collaborative learning experience of PS1 and PS2. PS3 encompasses elements for transition and preparation for clinical clerkships as well as material to complement LIC: - Inquiry Groups (IQ Groups): Students will continue to meet in IQ groups at regular intervals to share patient stories, focus questions for exploration, and develop learning objectives encompassing the four pillars of the PSU-COM curriculum - Integrated Science Sessions: Regular seminars to specifically integrate basic and clinical sciences in consultation with the COM and Penn State basic science faculty. - Kienle Groups: Regular sessions to explore medical humanities, ethics and professional identity formation - Clerkship-specific elements: PS3



also includes curricular time and space to address clerkship specific elements such as motivational interviewing, specialty-specific physical examination skills, clinical reasoning, clinical documentation and critical thinking skills.

**Prerequisite:** Successful completion of PS1 and PS2  $\checkmark$  University Park Program PS 711, PS 712

PS 733: Patients and Sciences - Course 4

16 Credits/Maximum of 16

PS-4 is a 20 week course offered in the Summer/Fall semester of the third year in the University Park Curriculum (UPC). Successful completion of this course is required for progression through the UPC. The focus of the course is to elaborate and extend medical student learning, following their clinical clerkship year, in foundational science as it relates and applies to the practice of evidence-based medicine. Consistent with the educational philosophy and mission of the University Park Curriculum, the course centers on clinical cases and problems that provide the basis for discussing core concepts. Students will actively participate in the discussions and use their skills at information gathering and peer teaching to engage the material and topics. Faculty facilitation ensures that key areas and ideas are organized, discussed and elaborated to maximize student learning and concept integration. While PS-4 provides content included in the board exam, it is not intended to be a board preparatory course. The focus of PS-4 is on foundational science concepts and knowledge to inform medical practice and support lifelong learning. The course builds on authentic clinical patient cases published in the medical literature. Two to three cases provide the context for learning each week. Cases are selected based on core concepts in foundational sciences (Aquifer Science Initiative) and the College of Medicine Core Curriculum. Learning objectives are developed in foundational sciences, with an emphasis on Biochemistry, Neuroscience, Genetics, Molecular Biology, Pathology, Immunology, Pharmacology, and Anatomy. This framework ensures coverage of a broad set of conceptual topics grounded in the selected case studies. Eberly College of Science and Hershey-based College of Medicine faculty serve as content expert discussants. Where possible, cases draw from student experience. Relevant background readings, video, or other web-based instructional material are provided in key topic areas to supplement student-driven research. Laboratory sessions in anatomy are also provided. In addition to the classroom work, all students will continue clinical responsibilities in a continuity practice of their choosing. One average, this experience will occur 1/2 day week. This course is Pass/Fail. Students will be provided with ongoing formative feedback including facilitator and peer feedback and customized NBME MCQ testing (Step 1 Bank) provided in a progress test format. Summative essay examinations will be administered at the mid-point and at the end of the course.

## Pediatrics - MD (PED)

PED 700: Pediatric Clinical Clerkship

10 Credits/Maximum of 10

Clinical experience in the management of the newborn, of the normal infant, and children with acute and chronic illness.

**Prerequisite:** restricted to medical students who have completed required preclinical training

PED 710: Pediatric Hematology/Oncology Acting Internship

5 Credits/Maximum of 5

Clinical and laboratory evaluation and treatment of hematologic and oncologic diseases in children. Conferences and rounds. One detailed topic review.

**Prerequisite:** third year core clerkships

PED 710A: Pediatric Hematology/Oncology Elective (3rd year)

2.5 Credits/Maximum of 2.5

This course provides exposure to the pediatric cancer patient and the field of Pediatric Oncology by closely following several patients through their full range of illness experiences. PED 710A Pediatric Hematology/Oncology Elective (2.5) This course is designed to introduce third year medical students to the field of Pediatric Oncology in a unique way. Students will be assigned selected patients under treatment for cancer or hematologic disease. Students will follow these patients and their families closely for the 2-week selective, but in addition to focusing on the medical care, the student will follow each patient through his or her entire experience. The student will be expected to research the primary disease and other medical issues of their assigned patients, attend daily rounds, and will also accompany and observe the patient through experiences related to their illness. These may include diagnostic tests, physical therapy, dietary, pharmacy, social work contact, play activities, and clinic visits and home visits if the patient is discharged. The student's experience will require contact with multiple consultants and departments involved in the care of their patients, including physicians, nurses, pharmacists, the team psychologist, teachers, social workers, child life, dieticians and others. Each student will meet at least weekly to discuss the assigned patients with one of the Pediatric Hematology/Oncology attendings and with the team psychologist. Rather than write daily notes, the student will keep a journal and prepare a written or oral presentation on at least one of their patients. The overall goal of the elective is to allow students to appreciate the scope of Pediatric Hematology/Oncology through the eyes of the patient and the entire medical team. This unique approach should lead the student to integrate knowledge and gain insight into the medical field not available through any other rotation. Evaluation will be by faculty but may include comments by the patients, their families, and other members of the medical team, as well as the quality of the student's final presentation.

**Prerequisite:** successful completion of any third year required clerkship that includes direct patient care (Pediatrics, Medicine, Surgery, Family Medicine, OB/GYN).

PED 720: Pediatric Endocrinology

5 Credits/Maximum of 5

Clinical applications of basic endocrine concepts, gland functions, and effects upon growth; evaluation of endocrine tests in disease states.

**Prerequisite:** PED 700

PED 726: Clinical Genetics

5-10 Credits/Maximum of 10

Mendelian and molecular principles of human genetics; genetic bases of human disease, quantitative human genetics, prenatal diagnosis, genetic counseling.

**PED 727: Neonatology Acting Internship**

5 Credits/Maximum of 5

Acting Internship emphasizing physiology of the newborn infant; concepts, practice, and procedures of intensive perinatal life support.

**Prerequisite:** successful completion of the Pediatrics core clerkship

**PED 728: Pediatrics–Milton Hershey School Elective**

5 Credits

This is an outpatient exposure to primary care medical problems of children in grades K-4 through 12.

**Prerequisite:** completion of third-year core clerkships

**PED 739: Pediatric Cardiology Elective with Global Health Experience**

5 Credits

This course provides exposure to basic concepts for diagnosis and management of children with cardiovascular diseases and cardiac abnormalities with a global health experience.

**Prerequisite:** successful completion of 3rd year clerkship in pediatrics and completion of 3rd year. This block is only offered for the end of October-November block (provided that external funds can be secured).

**PED 740: Pediatric Cardiology Elective (4th year)**

5 Credits/Maximum of 5

This course provides exposure to basic concepts for diagnosis and management of children with cardiovascular diseases and cardiac abnormalities.

**Prerequisite:** successful completion of 3rd year clerkship in pediatrics and completion of 3rd year. 3rd year students may apply for the last 2 blocks of the academic year (transition to internship for 4th year students) but preference will

**PED 741: Pediatric Pulmonary and Sleep Medicine Elective**

5 Credits/Maximum of 5

This course provides experience in basic concepts of the pathophysiology and clinical management of children with respiratory conditions and sleep neurobehavioral abnormalities.

**Prerequisite:** successful completion of the third year Pediatrics Clerkship

**PED 742: Pediatric Developmental & Behavioral Elective**

5 Credits/Maximum of 5

This course provides exposure to basic concepts for diagnosis and management of children with behavior problems and developmental delays.

**Prerequisite:** successful completion of 3rd year clerkship in pediatrics

**PED 747: Pediatric Allergy, Asthma and Immunology Elective**

5 Credits/Maximum of 5

This course provides exposure to basic concepts for diagnosis and management of children and adults with allergic and immunologic

diseases and respiratory and cutaneous abnormalities. MED 747 Clinical Elective in Allergy, Asthma and Immunology (5) The fourth year student rotating on the allergy service will experience an active and up to date Allergy and Immunology clinical service. Diseases you will be managing include allergic skin disorders, asthma, sleep, rhinitis, sinusitis, primary immunodeficiencies, recurrent infections, drug, food and insect allergy, and anaphylaxis. Developing an excellent history to include occupational, environmental and travel history will be facilitated. The student will be able to participate as an active member of the clinic and will have responsibility for the patient. We anticipate that you will act as an intern and will manage the patient completely from start to finish. Clinic hours are daily 8 AM to 5 PM except Weds AM which is our academic time. In addition, to clinic there is an opportunity to participate in inpatient consults; however, the majority of time (90%) will be spent in the clinic seeing patients. Techniques include skin biopsy, skin test, patch testing, spirometry, and patient education and there will be ample opportunity to practice these techniques. Most of the education is done bedside during the patient's visit. Lastly, we expect that the student will present a short power point presentation, develop a manuscript or participate in research if time permits.

**Prerequisite:** successful completion of the 3rd year required clerkships  
Cross-listed with: MED 747

**PED 750: Pediatric Nephrology/Diabetes**

5-10 Credits/Maximum of 10

Outpatient and inpatient clinical concepts/diagnosis and management of children with acute and chronic renal disease or renal electrolyte abnormalities.

**Prerequisite:** PED 700

**PED 750A: Pediatric Nephrology Elective (3rd year)**

2.5 Credits

This course provides exposure to basic concepts for diagnosis and management of children with kidney disease or fluid/electrolyte abnormalities. PED 750A Pediatric Nephrology Elective (2.5) This course is designed to introduce third year medical students to the basics of evaluation and management of children with kidney disease or hypertension, and to specifically to solidify skills gained in fluid and electrolyte management during the third year core clerkships including Pediatrics or Medicine, and in the year II Renal block. Students on this elective will serve as an integral part of the Pediatrics Nephrology team, personally evaluating and discussing management of patients on the inpatient, consult, and outpatient Pediatric Nephrology services. Didactic experiences will include daily, one-on-one discussions with the attending physician(s) on the Pediatric Nephrology service. Students will be expected to demonstrate evidence of independent reading in Pediatric Nephrology topics, and to attend scheduled Pediatric Nephrology and selected Pediatrics conferences. The overall goal of this elective is to allow students to attain the basic skills and knowledge necessary for initial evaluation of common Pediatric Nephrology problems encountered in primary care and in-patient pediatrics settings. Focus will be placed on review of renal physiology as it pertains to patient care, and to fluid and electrolyte management. Students will also be encouraged to hone their skills in obtaining a pediatric history and performing a pediatric physical exam. Evaluation methods will include a pre-test and post-test as well as subjective evaluation of students' funds of knowledge and patient care

skills by the attending pediatric nephrology faculty. This course will be offered throughout the entire academic year.

**Prerequisite:** successful completion of any third year course which includes direct patient care

PED 751: Pediatrics, Child Abuse Pediatrics Elective

5 Credits/Maximum of 5

This course provides the student with an exposure to the assessment and management of children alleged to be abused or neglected, the manifestations of child abuse and neglect, and the interface between medicine and other agencies (Child Protection, law enforcement, and legal professionals).

**Prerequisite:** successful completion of the 3rd year clerkships

PED 755: Pediatric Adolescent/Young Adult Medicine Elective (4th year)

5 Credits/Maximum of 5

Students participate in the evaluation and treatment of a full range of primary care services to adolescents and young adults.

**Prerequisite:** completion of third-year core clerkships

PED 765: Pediatric Neurology

5-10 Credits/Maximum of 10

Rounds, conferences, and clinics and experience in electroencephalography, electromyography, neuroradiology, neuro-ophthalmology, psychometric testing, and otolaryngology, as clinically appropriate.

**Prerequisite:** PED 700

PED 770: Pediatric Critical Care Medicine Acting Internship

5 Credits/Maximum of 5

Experience in pediatric critical care medicine.

**Prerequisite:** Successful completion of the pediatric core clerkship

PED 780: Pediatrics Acting Internship

5 Credits

Reinforces and expands the principles of inpatient pediatric care for fourth-year medical students motivated to perform as acting interns.

**Prerequisite:** Successful completion of the third year core clerkships

PED 796: Pediatric Individual Studies

5 Credits/Maximum of 5

Individually supervised creative projects, including basic or clinical pediatric research.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

PED 796A: Pediatric Individual Studies for 3rd Year Medical Students

2.5 Credits

Pediatrics Individual Studies for 3rd Year Medical Students.

**Prerequisite:** successful completion of one 3rd year core clerkship

PED 797: Pediatrics Special Topics

5 Credits/Maximum of 5

Basic or clinical electives in pediatrics at non-affiliated institutions.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for this course.

## Physical Medicine and Rehabilitation (PMR)

PMR 730: Physical Medicine and Rehabilitation Elective (3rd and 4th year)

5 Credits/Maximum of 5

This elective is for 3rd and 4th year medical students interested in gaining experience in the field of Adult and Pediatric Physical Medicine and Rehabilitation, improving diagnostic skills related to the complications of disability, and improving neurologic and musculoskeletal examination skills.

**Prerequisite:** successful completion of the second year of medical school

PMR 740: Physical Medicine and Rehabilitation Acting Internship

5 Credits/Maximum of 15

The medical students will participate in PM&R evaluations, care for patients on the inpatient rehabilitation service, inpatient PM&R consult service and management of patients within the outpatient clinics. The course will allow the student to build on their physical examination and diagnostic skills through clinical participation, practice, and feedback provided by the attending physicians. They will actively participate in management discussion with interdisciplinary teams during their rotation.

**Prerequisite:** Successful completion of Phases I and II (and prefer additional completion of a general PMR elective).

## Physician Assistant Studies (PAS)

PAS 701: Applied Human Structure and Function I

2 Credits

Course will discuss the clinically relevant anatomy and structural information necessary for clinical practice emphasizing surface anatomy and surface markings.

**Prerequisite:** Pre-Clinical Graduate Physician Assistant Student qualified as a result of their admission to this program.; Concurrent: PAS 704, PAS 707, PAS 710, PAS 713, PAS 716, PAS 720

**PAS 702: Applied Human Structure and Function II**

2 Credits

Course will discuss the clinically relevant anatomy and structural information necessary for clinical practice emphasizing surface anatomy and surface markings. PAS 702 Applied Human Structure and Function II (2) Course will discuss the clinically relevant anatomy and structural information necessary for clinical practice emphasizing surface anatomy and surface markings. The practical application of anatomical information to clinical medicine is covered by using case studies via team-based learning in anatomy. Clinical problems requiring anatomical knowledge for their solution are presented during each case conference session. Lectures and laboratories cover the embryonic development of the human body and the relationship to structure and function. Cadaver dissection will be utilized to reinforce the position of these anatomy structures so that clinical relevance can be elicited. Course objectives: At the completion of this course, the student will be able to: - Describe the normal anatomy and physiology as it relates to infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease - Use surface anatomy as the basis for the physical examination. - Identify normal and abnormal structures on dissection and discuss how abnormalities in human anatomy can impact health and disease states with regard infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease - Explain the relationship between anatomic structure and function and how this relates to health and disease. - Discuss the clinical relevance between anatomy and function. Methods of instruction will include: (1) lecture, (2) discussion, (3) demonstration, (4) audiovisual materials, (5) case studies, (6) dissection laboratories. The audiovisual materials will be in the form of Primal Anatomy (Penn State has already purchased) and the Netter Anatomy Atlas (available via Harrell Library). Classes will be held in C1847 every Wednesday from 1-5 pm Wednesdays and Fridays from 3-5 pm throughout the semester. There may be adjustments to these class sections, depending upon topics under discussion. The dissection of the musculoskeletal system will occur at the regularly scheduled and announced dissection times per mutual schedule agreement between the College of Medicine and the Physician Assistant Program. These dissections will typically occur in the morning hours over 4 days per week for two weeks during this semester. The topics covered in this class will correspond to the topic areas in the clinical medicine integrated class, namely infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease Evaluation strategies will include multiple choice examinations, practical laboratory examinations, and tests which involve the identification of structures and their function. This class is offered during the second semester (fall semester) of the Physician Assistant Program and will be offered yearly. Since this class is intended to prepare these students for their role as practicing physician assistants, this class will be focused on this group of students.

**Prerequisite:** PAS 701 , PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 717 , PAS 723

**PAS 703: Applied Human Structure and Function III**

2 Credits

Course will discuss the clinically relevant anatomy and structural information necessary for clinical practice emphasizing surface anatomy and surface markings. PAS 703 Applied Human Structure and Function III (2) Course covers the clinically relevant anatomy, structural information,

underlying physiology, and clinical application necessary for preparing students for clinical practice emphasizing the relationship between anatomy and clinical disease. The practical application of anatomical information to clinical medicine is covered by using case studies via team-based learning in anatomy. Clinical problems requiring anatomical knowledge for their solution are presented during each case conference session. Lectures and laboratories cover the embryonic development of the human body and the relationship to structure and function. Cadaver dissection will be utilized to reinforce the position of these anatomy structures so that clinical relevance can be elicited. Course objectives: At the completion of this course, the student will be able to: - Describe the normal anatomy and physiology as it relates to the practice of medicine. - Use surface anatomy as the basis for the physical examination. - Identify normal and abnormal structures on dissection and discuss how alteration in human anatomy can impact health and disease states. - Explain the relationship between anatomic structure and function and how this relates to health and disease. - Discuss the clinical relevance between anatomy and function. - Describe the relationship between clinical anatomy and its radiographic appearance. Methods of instruction will include: (1) lecture, (2) discussion, (3) demonstration, (4) audiovisual materials, (5) case studies, (6) dissection laboratories, (7) radiographic correlation. The audiovisual materials will be in the form of Primal Anatomy (Penn State has already purchased) and the Netter Anatomy Atlas (available via Harrell Library). Classes will be held in C1847 every Wednesday (1-5 pm) and Fridays (3-5 pm) with the anatomy dissection laboratory being utilized for two weeks during the semester. The dissection laboratory will occur from 8- 12 daily from Monday through Friday with the students from the College of Medicine. The students will be integrated with the medical students and these groups will rotate in the dissection laboratory, as assigned. The lecture-based instruction will take place in C1847 and will primarily consist of case-based instruction. The topics covered in this class will correspond to the topic areas in the clinical medicine integrated class, namely cardiology, pulmonary, oncology, general surgery. Evaluation strategies will include multiple choice examinations, practical laboratory examinations, and tests which involve the identification of structures and their function. This class is offered during the third semester (spring semester) of the Physician Assistant Program and will be offered yearly.

**Prerequisite:** PAS 706 , PAS 718 , PAS 712 , PAS 709 , PAS 715 , PAS 728

**PAS 704: Clinical Medicine I**

5 Credits

This is the cornerstone of all the medically relevant courses. Various disease processes will be described, along with the incidence, prevalence, pathophysiology, treatment plans, and expected outcomes.

**Prerequisite:** Pre-Clinical Graduate Physician Assistant Student qualified as a result of their admission to this program; Concurrent: PAS 701, PAS 707 , PAS 710 , PAS 713 , PAS 716 , PAS 720

**PAS 705: Clinical Medicine II**

5 Credits

This is the cornerstone of all the medically relevant courses. Various disease processes will be described, along with the incidence, prevalence, pathophysiology, treatment plans, and expected outcomes. PAS 705 Clinical Medicine II (5) This is the cornerstone of all the medically relevant courses. Various disease processes will be described, along with the incidence, prevalence, underlying causes, treatment plans, and expected outcomes. This course is organized into blocks covering infectious

disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. Grand Round presentations at the Hershey Medical Center may be used to supplement the topics in this class and will be assigned, as needed. The typical presentation for these disorders will be discussed along with a wide spectrum of the disease entity. With the integrated approach to this curriculum, deep discussion regarding the prevalence, signs and symptoms, initial evaluation strategies and clinical interventional strategies will be discussed. Team-Based Learning and Critical Thinking Skill Development/Patient Communication discussion will be held throughout the semester in order to will support and reinforce the information provided in this class. This course is held during the second pre-clinical semester for students in the physician assistant program. Active learning strategies will be employed in order to keep the student actively engaged in this educational process. Reflective thinking exercises will be utilized in order for the student to gain critical thinking skills in order to apply this knowledge to the clinical setting. At the conclusion of this course, the student will be able to identify, assess, evaluate, and provide clinical interventional strategies for patients who present with complaints related to the following systems: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. Students successfully completing this course will also be able to demonstrate their interpersonal communication skills to their patients with regard to patient education for preventive and acute care strategies and for ongoing support for patients with chronic disease states. Evaluation methods will primarily consist of multiple choice examinations. These examinations are intended to allow students to demonstrate their ability to critically apply their knowledge for clinical case scenario questions and also to demonstrate their knowledge for these covered conditions. Although the test format will primarily be multiple choice questions, students should be aware that properly written questions can assess student knowledge in the following subject areas: most likely diagnosis, clinical intervention, ordering appropriate diagnostic studies, performing clinical therapeutics, applying scientific knowledge, recommending prevention and health maintenance strategies, and utilizing clues from the patient presentation, history and physical examination in order to pursue further diagnostic strategies.

**Prerequisite:** PAS 704 ' Pre-Clinical Graduate Physician Assistant Student qualified as a result of their admission to this program.; Concurrent: PAS 702, PAS 708 , PAS 711 , PAS 714 , PAS 717 , PAS 723

PAS 706: Clinical Medicine III

5 Credits

This is the cornerstone of all the medically relevant courses. Various disease processes will be described, along with the incidence, prevalence, pathophysiology, treatment plans, and expected outcomes. PAS 706 Clinical Medicine III (5) This is the cornerstone of all the medically relevant courses. Various disease processes will be described, along with the incidence, prevalence, underlying causes, treatment plans, and expected outcomes. This course is organized into blocks covering cardiology, pulmonary, hematology, and oncology. Grand Round presentations at the Hershey Medical Center may be used to supplement the topics in this class and will be assigned, as needed. The typical presentation for these disorders will be discussed along with a wide spectrum of the disease entity. With the integrated approach to this curriculum, deep discussion regarding the prevalence, signs and symptoms, initial evaluation strategies and clinical interventional strategies will be discussed. Team-Based Learning and Critical Thinking Skill Development/Patient Communication discussion will be held

throughout the semester in order to will support and reinforce the information provided in this class. This course is held during the second pre-clinical semester for students in the physician assistant program. Active learning strategies will be employed in order to keep the student actively engaged in this educational process. Reflective thinking exercises will be utilized in order for the student to gain critical thinking skills in order to apply this knowledge to the clinical setting. At the conclusion of this course, the student will be able to identify, assess, evaluate, and provide clinical interventional strategies for patients who present with complaints related to the following systems: cardiology, pulmonary, hematology, and oncology.. Students successfully completing this course will also be able to demonstrate their interpersonal communication skills to their patients with regard to patient education for preventive and acute care strategies and for ongoing support for patients with chronic disease states. Evaluation methods will primarily consist of multiple choice examinations. These examinations are intended to allow students to demonstrate their ability to critically apply their knowledge for clinical case scenario questions and also to demonstrate their knowledge for these covered conditions. Although the test format will primarily be multiple choice questions, students should be aware that properly written questions can assess student knowledge in the following subject areas: most likely diagnosis, clinical intervention, ordering appropriate diagnostic studies, performing clinical therapeutics, applying scientific knowledge, recommending prevention and health maintenance strategies, and utilizing clues from the patient presentation, history and physical examination in order to pursue further diagnostic strategies.

**Prerequisite:** Pre-Clinical Graduate Physician Assistant Student qualified as a result of their admission to this program; Concurrent: PAS 703, PAS 709 , PAS 712 , PAS 715 , PAS 718 , PAS 726

PAS 707: Pathophysiology I

2 Credits

This class provides a systems approach to basic concepts of disease processes which enables analysis for alterations to body systems.

**Prerequisite:** Preclinical student qualified for the Penn State Physician Assistant Program; Concurrent: PAS 701, PAS 704 , PAS 702 , PAS 710 , PAS 721 , PAS 714

PAS 708: Pathophysiology II

2 Credits

This class provides a systems approach to basic concepts of disease processes which enables analysis for alterations to body systems. PAS 708 Pathophysiology II (2) Class provides a systems approach to basic concepts of disease processes which enables analysis for alterations to body systems. Normal physiology will be discussed as part of the class but class emphasis is in the area of pathophysiology. Concepts are reviewed for the understanding that disease processes represent a disruption in homeostasis and a breakdown of normal integration of structure and function. Pathology regarding the following systems will be presented: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. Special emphasis will be placed upon normal physiology and pathophysiologic processes that affect specific population subtypes. This is the cornerstone of all physiology and pathophysiology instruction utilized in the curriculum. Various disease processes will be described with discussion as to the underlying causes. Normal physiology will be discussed so that the learner can better grasp

the outcomes of processes when normal physiology breaks down. This course is organized into blocks covering: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. This course will be presented concurrently with physiology, pharmacology, and the clinical medicine approach to the course topics, as seen from the clinician's perspective. This integrative approach covering multiple elements of each of the conditions allows the student to gain an inclusive perspective to all of the covered entities. Other elements of the curriculum during this semester will be separately presented during the semester and these other courses will further support and enhance the topics covered in these sections. Instructional Objectives: At the conclusion of this course the student will: - Demonstrate the ability to formulate differential diagnosis and evaluation methods for patients who present with alterations in the normal physiologic processes for the following systems: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. - Develop a plan for patients who present with complaints in the following systems: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. - Describe the presentation, key findings, and underlying causes of both physiology and pathophysiology infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease. - Explain the importance and role of diagnostic interventions that are used for patients who present with diseases related to the following systems: infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease with the understanding of both normal and abnormal physiological processes. - Explain the underlying processes for the various diseases that are covered in the areas of infectious disease, neurology, dermatology, ophthalmology, otolaryngology, rheumatology, general surgery, and musculoskeletal disease.

**Prerequisite:** PAS 707 ; Preclinical student qualified for the Penn State Physician Assistant Program; Concurrent: PAS 702, PAS 705 , PAS 711 , PAS 714 , PAS 717 , PAS 723

PAS 709: Pathophysiology III

2 Credits

This class provides a systems approach to basic concepts of disease processes prior to analyzing common alterations to body systems. PAS 709 Pathophysiology III (2) This class provides a systems approach to basic concepts of disease processes prior to analyzing common alterations to body systems. Normal physiology components will be discussed as part of the class but the emphasis for this class is in the area of pathophysiology. Concepts are reviewed for the understanding that disease processes represent a disruption in homeostasis and a breakdown of normal integration of structure and function. Pathology regarding the following systems will be presented in detail: Cardiac and Pulmonary systems.

**Prerequisite:** PAS 715 and PAS 716 . Third semester graduate student in the Penn State PA program; Concurrent: PAS 703, PAS 706 , PAS 712 , PAS 715 , PAS 718 , PAS 726

PAS 710: Pharmacology I

2 Credits

This class will review the basic principles of drug action, their indications, contraindications, toxicities, and potential side effects.

**Prerequisite:** Preclinical student qualified for the Penn State Physician Assistant Program; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 713 , PAS 716 , PAS 720

PAS 711: Pharmacology II

2 Credits

This class will review the basic principles of drug action, indications, contraindications, toxicities, and potential adverse effects. PAS 711 Pharmacology II (2) This class provides instruction in the basic principles of drug action, drug indications, drug interaction, toxicities, and adverse drug effects, as taught from the perspective of the clinician prescriber. Students will be able to study the commonly used drugs affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal condition. Indications for using first and second-line medications will be emphasized in this course along with the exclusions for using these medications in specific circumstances. Special emphasis is placed upon the use of medications in special populations (pregnancy, pediatric, geriatric) and how these conditions can affect drug metabolism. This is the cornerstone of pharmacology instruction in the curriculum. Various disease processes will be described along with pharmacologic management. This course is organized into blocks covering affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal conditions. This course is presented concurrently with physiology, pathophysiology, and the clinical medicine approach to the course topics, as seen from the prescriber's perspective. This integrative approach covers multiple perspectives for each of the conditions allowing the student to gain an overall perspective to these covered entities. Other elements of the curriculum will be separately presented during the semester and these other courses will further support and enhance the topics covered in these sections. Instructional Objectives: At the conclusion of this course the student will be able to: - Demonstrate the ability to develop a tiered treatment regimen for conditions relating to the affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal condition. - Describe the presentation, key findings, and underlying causes of both normal and abnormal disease processes in affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal condition which will entail personalized medicine and treatment plans. - Explain the importance and role of diagnostic interventions that are used for patients who present with diseases related to the affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal condition. - Explain the underlying processes for the various diseases regarding the affecting infectious disease, dermatologic disease, neurologic condition, rheumatologic condition, ophthalmologic condition, otolaryngologic condition, oral cavity, and musculoskeletal condition so that individual clinical therapeutic plans can be developed. Evaluation Methods: Traditional assessment methods will be utilized in this course (multiple choice, best-answer examinations). The learning

goals of this class necessitate that core knowledge is assessed along with the student's ability to develop treatment regimen based upon clinical case scenario. This class will provide relevant, authentic case discussion for problems involving the gastroenterologic, renal/urologic, endocrine, and immune systems along with geriatric medicine.

**Prerequisite:** PAS 710 ; Preclinical student qualified for the Penn State Physician Assistant Program; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 714 , PAS 717 , PAS 723

PAS 712: Pharmacology III

2 Credits

This class will review the basic principles of drug action, their indications, contraindications, toxicities, and potential side effects. PAS 712 Pharmacology III (2) This class will review the basic principles of drug action, their indications, contraindications, toxicities, and potential side effects. Students will be able to study the commonly used drugs affecting the cardiac and pulmonary systems. Students will be expected to select the preferred medication in any given circumstance with regard to conditions affecting the cardiac and pulmonary systems. This class will provide instruction from the perspective of the prescriber of the medication. Instruction will include therapeutic interventions that consist of more than just medications being delivered. Routes of administration of medication will also be discussed along with providing instruction as to how dosing can affect drug delivery and activity.

**Prerequisite:** PAS 710 and PAS 711 ; third semester graduate student in the Penn State Graduate Physician Assistant Program; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 715 , PAS 718 , PAS 726

PAS 713: Pharmacotherapeutics I

1 Credits

This course discusses the mechanism of action, medication classification, the indications, contraindications, and adverse events seen with medication use.

**Prerequisite:** First semester physician assistant student who is qualified for this course through the admission criteria for the PA program; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 710 , PAS 716 , PAS 720

PAS 714: Pharmacotherapeutics II

1 Credits

Course discusses the mechanism of action, the medication classification, the indications, contraindications, and adverse effects with the use of medications. PAS 714 Pharmacotherapeutics II (1) This course will discuss the mechanism of action, the classification system for medications, the indications, contraindications, and side effects with the use of medications in various systems. This course will discuss the various methods by which medications can be utilized and will highlight and explain why certain medications are considered to be the drug of choice for a given problem. Alternatives to medications may also be discussed in the management of various conditions. This course will also discuss costs of medications so that the graduate physician assistant student is taught pharmacotherapeutics from a cost-effective perspective. The subjects that will be emphasized during this course will be infectious disease, HEENT, neurology, rheumatology, behavioral medicine, and musculoskeletal medicine.

**Prerequisite:** Pharmacotherapeutics I; student enrolled in the pre-clinical curriculum of the Penn State Physician Assistant Program; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 717 , PAS 723

PAS 715: Pharmacotherapeutics III

1 Credits

This course will discuss the mechanism of action, the classification system for medications, the indications, contraindications, and side effects with the use of medications in various systems. PAS 715 Pharmacotherapeutics III (1) This course will discuss the mechanism of action, the classification system for medications, the indications, contraindications, and side effects with the use of medications in various systems. This course will discuss the various methods by which medications can be utilized and will highlight and explain why certain medications are considered to be the drug of choice for a given problem. Alternatives to medications may also be discussed in the management of various conditions. This course will also discuss costs of medications so that the graduate physician assistant student is taught pharmacotherapeutics from a cost-effective perspective. This course will emphasize topic areas in the following systems: cardiac, pulmonary, hematologic, and oncologic systems.

**Prerequisite:** Pharmacotherapeutics I, Pharmacotherapeutics II; Graduate student in the third semester of the Penn State Physician Assistant Program; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 . PAS 718 , PAS 726

PAS 716: History and Physical Examination I

2 Credits

Techniques for eliciting a complete medical history, performance of a complete physical examination, and accurate recording in a patient record.

**Prerequisite:** First semester student in the physician assistant program who has been qualified for admission; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 710 , PAS 713

PAS 717: History and Physical Examination II

2 Credits

Students integrate the history and physical examination to perform an accurate evaluation of the patient while demonstrating appropriate interpersonal behaviors. PAS 717 History and Physical Examination II (2) A continuation of PAS 716, History and Physical Examination I. Students begin to integrate the results of history, physical and laboratory findings to arrive at an accurate evaluation of the patient so that the physician assistant and the supervising physician can determine the next appropriate diagnostic or therapeutic step. Course emphasis will be on interpersonal communication between the physician assistant student and the patient in a culturally competent and caring, empathetic manner. Students will gather patient information, organize this data, and arrive at differential diagnoses based upon the information that has been gathered for patients who present with complaints related to their musculoskeletal, ophthalmologic, otolaryngologic, dental, dermatologic, or neurologic system. This class will complement the topic areas that are covered during the integrated clinical medicine, pathophysiology, and pharmacologic courses. Students will be able to apply knowledge and progress in their knowledge from the topics presented in those other courses which are taught concurrently with the history and physical examination II course. Students will practice history and

physical examination techniques in the history and physical examination laboratory and the clinical simulation laboratory. Simulated patients will be utilized for this course in order to assess the student's ability to professionally interact with these patients in a culturally competent and caring method.

**Prerequisite:** PAS 716 . Open to students enrolled in the physician assistant curriculum; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 723

PAS 718: History and Physical Examination III

2 Credits

Students perform and integrate the results of history, physical and laboratory findings to arrive at an accurate working diagnosis. PAS 718 History and Physical Examination III (2) A continuation of PAS 716 and PAS 717. Students begin to integrate the results of history, physical and laboratory findings to arrive at an accurate evaluation of the patient so that a working diagnosis can be established. Students will perform both directed and comprehensive histories and physical examinations and prepare patient notes from these findings. Course emphasis will be on interpersonal communication between the physician assistant student and the patient in a culturally competent and caring, patient-centered empathetic manner. Students will gather patient information, organize this data, and arrive at differential diagnoses based upon the information that has been gathered for patients who present with complaints related to their cardiac and pulmonary systems. This class will complement the topic areas that are covered during the integrated clinical medicine, pathophysiology, and pharmacologic courses. Students will be able to apply knowledge and progress in their knowledge from the topics presented in those other courses which are taught concurrently with the history and physical examination II course. Students will practice history and physical examination techniques in the history and physical examination laboratory and the clinical simulation laboratory. Simulated patients will be utilized for this course in order to assess the student's ability to professionally interact with these patients in a culturally competent and caring method.

**Prerequisite:** PAS 716 , PAS 717 . Third semester student in the preclinical Penn State Physician Assistant Program; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 726

PAS 719: Evidence-Based Medicine

1 Credits

Course covers statistics, medical literature searches, formulating PICO (Population, Intervention, Comparison and Outcomes) questions and knowledge application in clinical practice. PAS 719 Evidence-Based Medicine (1) Evidence-based Medicine (PAS719) is a mandatory 14 week course given during the first year of the curriculum consisting of 14 two hour sessions. The course will be held on Fridays from 1-3 pm during the fall semester. Multiple learning environments will be utilized including didactic sessions, TBL, small group learning and standardized patient exercises. Students will be taught relevant statistics, how to utilize the medical literature, formulation of PICO (Population, Intervention, Comparison and Outcomes) questions and, most importantly, application of their knowledge at the point of care for patient care. Course faculty will be multi-disciplinary and include physicians and library staff who have taught such courses in the College of Medicine to medical students for a number of years. This course is intended to instruct the physician assistant student in how to find and interpret the medical literature. As a result of this course, students will be able to frame the clinical

question, perform literature searches at the point of care, and be able to guide patients into making informed choices about their care based upon medical evidence. As a result of this course, students will be able to search for information regarding best practice of care and students will gain the ability to sift through what various clinical trials mean for translational medicine. Students will be provided opportunities to perform point of care evidence searches at the point of care during this class so that this skill can be translated to their clinical experiences as both a student in the clinical phase of the PA program and also as practicing physician assistants. Assessment methods will include practical experience in searching the medical literature, exercises with standardized patients with developing the clinical question and applying evidence-based medicine point of care techniques. Students will be detailed on the standards for passing this course on the course syllabi. Grading for this course will be from the instructors and peers taking this course. This course is a required course for physician assistant education, as determined by the national accrediting agency for physician assistants. Learning outcomes for each of the teaching sessions will be provided to the student electronically through the academic management system such as Angel.

**Prerequisite:** completion of Summer semester; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 717

PAS 720: Pediatric Studies

1 Credits

This course will prepare students for their role in the evaluation and management of the pediatric population.

**Prerequisite:** Physician assistant student who meets the criteria for entry into the physician assistant program at Penn State College of Medicine PA program; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 710 , PAS 713 , PAS 716

PAS 721: US Health Care System/Legal Medicine

1 Credits

This course is intended to introduce the graduate physician assistant to the health care delivery system in the United States with reference to how the physician assistant profession fits into this system for providing accessible, comprehensive, and cost-effective care. This course will also cover the legal aspect involved with medical practice.

**Prerequisite:** First semester student in the preclinical phase of the Penn State Physician Assistant Program, having fulfilled all of the requirements for program entry.; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 710 , PAS 713 , PAS 71

PAS 722: Women's Health Studies

1 Credits

This course is intended to prepare the graduate physician assistant student to assess and manage the female population in the area of prenatal care, labor and delivery, and routine and complicated gynecologic care.

**Prerequisite:** Student admitted to the preclinical physician assistant program having fulfilled the requirements for admission to this program; Concurrent: PAS 701, PAS 704 , PAS 707 , PAS 710 , PAS 713 , PAS 716



## PAS 723: Behavioral Medicine

## 1 Credits

This course will provide students with instruction in the practice of behavioral medicine. PAS 723 Behavioral Medicine (1) This course will instruct the student in the practice of behavioral medicine. The program will provide instruction in order for the student to identify normal and abnormal behavior patterns along with the psychological and pharmacological treatment modalities that are required to evaluate and treat these conditions. Upon completion of the course, the student will be able to determine normal and abnormal psychological syndromes and will be able to perform a clinical exam on a psychiatric patient. The student will be able to utilize the DSM-V manual. The student will gain expertise in many psychiatric syndromes, including schizophrenia, mood disorders, anxiety disorders, somatoform disorders, dissociative disorders, eating disorders, and disorders affecting children. The emphasis of this course will be on interviewing techniques that are performed at the patient bedside. Students will be able to demonstrate appropriate listening, asking appropriate open-ended and probing questions, and demonstrate the ability to obtain the appropriate material for developing a differential diagnosis. After the diagnosis is narrowed down, the student will appropriately develop a treatment plan that may include the use of psychotropic medications.

**Prerequisite:** Completion of Summer semester. Physician Assistant Student in the pre-clinical portion of the PA program.; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 717

## PAS 724: Laboratory Interpretive Methods

## 1 Credits

The course will cover indications, contraindication, and interpretation of laboratory studies for evaluating or confirming clinical disease states. PAS 724 Laboratory Interpretive Methods (1) The course will cover common laboratory procedures employed in clinical practice. Discussion will take place which will allow the students to carefully select appropriate laboratory tests based upon clinical presentation of the patient along with the sensitivity and specificity of the tests themselves. Students will determine the appropriate indications and contraindications for ordering tests based primarily on evidence-based support for those tests. After the student gains insight into the appropriate ordering of these tests, the course instruction will emphasize the interpretation of these tests along with the ability to inform patients about what these test results mean for the patient. Students will gain an ability to provide rationale behind why tests are or are not indicated, based upon the clinical presentation of the patient. Students will develop proficiency in analyzing CBC, urinalysis, gram stains, and cultures. Students develop skills in interpreting clinical laboratory values in relation to disease, therapy, and prognosis. Topics include hematology, serology, clinical chemistry, and microbiology. The student will also gain experience in evaluating clinical laboratory cases. The emphasis of the course will be on the student being able to order appropriate clinical tests based upon the differential diagnosis of the clinical patient. This class, like many others in the curriculum, has the intention of enhancing student learning in order to taking care of patients and becoming a competent provider for patients who need our assistance. As part of our integrated curriculum, laboratory ordering and interpretation will help to close the loop for the various conditions that are discussed during the clinical medicine lecture series. Since this is a one semester course, laboratory studies will encompass the entire breadth of the clinical sections that will be covered in our longitudinal curriculum. This course will be offered every

fall semester which is the second semester in the pre-clinical curriculum. Thirty students per semester will be enrolled in this class.

**Prerequisite:** Pre-Clinical Physician Assistant Student in the second semester of the PA program.; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 717

## PAS 725: Physician Assistant Professional Practice

## 1 Credits

Students learn the history and the professional roles of the physician assistant profession plus licensing and requirements of this profession. PAS 725 Physician Assistant Professional Practice (1) Students will learn the history of the PA profession, the roles of the PAs in current practice, and current issues facing the PA profession. In addition, students will become familiar with the professional standing and requirements for PA practice, where and how to locate professionally-relevant material, and the legal requirements related to the PA profession and medical practice, in general. Students will be provided with the basic information regarding licensure, credentialing, and certification requirements. Students will be provided information regarding the uniqueness of this profession among all of the other health professions. Employment opportunities and practice requirements will be discussed as part of this class. The role of the electronic medical record in today's healthcare delivery system will be discussed as well as demonstration of utilization of this electronic resource. Discussion will take place which will involve the emerging changes that are occurring within this profession. Debate will take place regarding the move toward specialty examinations in order to attain certificate of added qualifications. Students will be apprised of the new requirements for maintaining certification, namely the project improvement and self-assessment processes. This is a stand-alone course which is offered during the second semester of the preclinical phase of the PA program. Documentation on the electronic medical record will be discussed and this strategy will coincide with the history and physical examination courses which emphasize the collection of this patient-related data. Evaluation of the student will typically be by written examination. Testing methods will primarily be in the form of multiple choice questions based upon knowledge about this profession that the student will enter upon graduation. Students will be expected to demonstrate an appropriate level of knowledge which will be vital in obtaining licensure and certification following completion of this program. This course will be held in a lecture type of classroom in a large group discussion format. This course will be offered every summer semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort.

**Prerequisite:** Second semester student in the physician assistant program, having fulfilled all the requirements for the PA program.; Concurrent: PAS 702, PAS 705 , PAS 708 , PAS 711 , PAS 714 , PAS 717

## PAS 726: Advanced Cardiac Life Support

## 1 Credits

Current methods and practices in advanced cardiac life support and emergency intervention will be discussed. PAS 726 Advanced Cardiac Life Support (1) Current methods and practices in advanced emergency intervention will be discussed. Topics include rapid patient assessment, CPR, intubation, intravenous and interosseous medication administration, application of an external pacemaker, use of an automated external defibrillator, and defibrillation protocols. Simulation will be utilized during the course and students will have ample time for practice. Arrangements

for small group sessions can be made at the request of the student and the instructor. Megacode practice along with practice of various cardiovascular skills will be included as part of this class. Evaluation of the student will typically be by written and practical examination. Testing methods will primarily be in the form of multiple choice questions based upon clinically relevant and authentic case scenarios. Students will be expected to demonstrate an appropriate level of knowledge along with the ability to apply this knowledge in a clinical case scenario type of presentation. Students will need to demonstrate an ability to develop a differential and most likely diagnosis, use history and physical examination findings to make diagnoses and clinical decisions, identify clinical interventional strategies, perform clinical therapeutics, and apply scientific knowledge in order to describe the underlying pathology for these various conditions. Students will also be given an opportunity to demonstrate actual practice of these clinical skills in the simulation laboratory. The clinical skills laboratory is also available to the students for additional practice 24 hours per day. Since this course requires hands-on practical application of care, this course will require demonstration of these techniques. This course will be held in a lecture type of classroom in a large group discussion format and also the clinical simulation laboratory. This course will be offered every summer semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort. The notes for this class will be fully available on ABLE. Various EKGs and pictures are part of the discussion and students will be given the opportunity to view these notes and pictures on ABLE since these pictures do not copy on handouts. Students should realize the cross-over of material between this course and the EKG interpretation course. Therefore, they should be very flexible in the Monday and Friday afternoon time frames for the purposes of integration of this material.

**Prerequisite:** Successful completion of first two semesters of the preclinical training. Basic life support is also a requirement for entrance into this course (student completed the basic life support requirement during the PA program orientat

#### PAS 727: Clinical Skills

1 Credits

This course will develop skills in performing routine therapeutic procedures to treat common disease entities. PAS 727 Clinical Skills (1) This course will develop skills in performing routine therapeutic procedures to treat common disease entities. It will include discussion of indications, contraindications, and complications of the various procedures. This course will discuss aseptic techniques, communication skills to be utilized when performing procedures on patients, and the need for obtaining informed consent and how to perform an appropriate "time out" before performing the procedure. The format will be a combination of lecture, demonstration of skills, discussion of procedures, and student practice of skills. Evaluation of the student will typically be by written and practical examination. Testing methods will primarily be in the form of multiple choice questions based upon clinically relevant and authentic case scenarios. Students will be expected to demonstrate an appropriate level of knowledge along with the ability to apply this knowledge in a clinical case scenario type of presentation. Students will need to demonstrate the hands-on care for performing procedures that are expected of clinically practicing physician assistant students. This course will be held in a lecture type of classroom in a large group discussion format. This course will be offered every summer semester for the physician assistant student in the Penn State College of Medicine

Physician Assistant Program. Expected enrollment is for 30 students in this class cohort.

**Prerequisite:** completion of Summer and Fall semesters; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 718

#### PAS 728: EKG Interpretive Methods

1 Credits

This course is a study of electrocardiographic (EKG) interpretation that may be used as part of the diagnostic evaluation process. PAS 728 EKG Interpretive Methods (1) This course is a study of electrocardiographic (EKG) interpretation that may be used to diagnose common pathologies, confirm diagnoses, and screen for the presence of abnormalities. This course is not all-inclusive, but rather, is an introduction to the art of the interpretation of EKG. We will differentiate between normal and abnormal diagnostic studies, and discuss the process of interpreting and evaluating common abnormalities and disorders. Topics include the elements of basic EKG and x-ray interpretation. For the EKG component, this includes rate, rhythm and axis determination, the recognition of arrhythmias and conduction abnormalities, and the changes seen with myocardial ischemia and infarction. There will be a clear connection between the EKG findings and the clinical presentation for these findings. EKG must always be interpreted in light of the patient's clinical presentation and this adage will be emphasized as part of this class. Evaluation of the student will typically be by written examination and actual interpretation of both rhythm strips and 12-lead EKGs. Testing methods will primarily be in the form of multiple choice questions based upon clinically relevant and authentic case scenarios. Students will be expected to demonstrate an appropriate level of knowledge along with the ability to apply this knowledge in a clinical case scenario type of presentation. Students will be asked specific questions on these EKGs and full interpretation of these electrocardiograms will also be included as part of this assessment. This course will be held in a lecture type of classroom in a large group discussion format. There will be ample time for EKG discussion based upon the clinical scenarios of the patients with these findings. This course will be offered every summer semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort.

**Prerequisite:** Completion of the summer and fall preclinical semesters in the physician assistant program.; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 718

#### PAS 729: Emergency Studies

1 Credits

This course is intended to prepare graduate physician assistants in their management of a patient with acute emergency situations. PAS 729 Emergency Studies (1) This course will provide instruction on emergency studies and the clinical evaluation and management of patients who present to emergency departments for care. There will be a range of topics covered in this course from the mild but common types of presentations to life-threatening emergencies which will require immediate action in order to positively affect the life of the patient. Since one of the program's essential goals is for its graduates to be able to treat patients who are threatened with an emergency, this course is intended to provide instruction in helping to guide the student to achieve these goals. This course will emphasize the ability of the student to recognize patients with an emergency, be able to develop a differential diagnosis for these conditions, order appropriate diagnostic studies,

and perform clinical intervention for these patients with presenting and ongoing complaints. Students will also be apprised of the need to see how care is rendered for these emergency situations so that other professionals are appropriately utilized in a team-based health care delivery situation. Evaluation of the student will typically be by written examination. Testing methods will primarily be in the form of multiple choice questions based upon clinically relevant and authentic case scenarios. Students will be expected to demonstrate an appropriate level of knowledge along with the ability to apply this knowledge in a clinical case scenario type of presentation. Students will need to demonstrate an ability to develop a differential and most likely diagnosis, use history and physical examination findings to make diagnoses and clinical decisions, identify clinical interventional strategies, perform clinical therapeutics, and apply scientific knowledge in order to describe the underlying pathology for these various conditions. This course will be held in a lecture type of classroom in a large group discussion format. This course will be offered every summer semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort.

**Prerequisite:** completion of Summer and Fall semesters; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 718

PAS 730: Medical Ethics

1 Credits

This course aims to introduce students to a variety of ethical problems that arise in the practice of medicine. PAS 730 Medical Ethics (1) This course aims to introduce students to a variety of ethical problems that arise in the practice of medicine. This course will also introduce ethics methods - in other words, how do you do ethics in a systematic fashion that will increase the probability of arriving at right answers? The goal is to apply a systematic framework to ethical dilemmas in order to de-mystify the process and empower students to reach their own right answers. At the conclusion of the course, student will be able to - Recognize common ethical issues they are likely to face, and consider the issue within the larger context of a moral method - Demonstrate an ability to anticipate and avoid ethical problems - Resolve ethical dilemmas using moral methods This course aims to accomplish four primary goals. First, I want to begin to improve your critical thinking skills. This is partly accomplished by assigning readings that address various topics and issues that are relevant and then engaging them in directed classroom discussion of those readings and subjects. Second, through class discussion I want to expose and familiarize you with an interactive Socratic style of classroom activity in which the goal is shared exploration of the topics rather than a passive lecture-style classroom. Along with improving critical thinking, this allows us to practice and improve our ability to articulate, discuss and debate ideas aloud (ie, interpersonal and team interaction skills). Third, you will become more familiar with some of the basic concepts, issues, arguments and cases in medical ethics.

**Prerequisite:** Completion of Summer and Fall semesters; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 718

PAS 731: Radiology Interpretive Methods

1 Credits

This course prepares students for ordering and interpreting radiographic images used to diagnose common pathologies, confirm diagnoses, and perform screenings. PAS 731 Radiology Interpretive Methods

(1) This course prepares graduate physician assistant students for ordering and interpreting radiographic (x-ray) images that are used to diagnose common pathologies, confirm diagnoses, and screen for the presence of abnormalities. This course is not all-inclusive, but rather, is an introduction to the art of the interpretation of the x-ray. We will differentiate between normal and abnormal diagnostic studies, and discuss the process of interpreting and evaluating common abnormalities and disorders. There will be an overview of basic organ systems with the following considerations: technical (choice of imaging techniques available), anatomic (review of basic landmarks), and common pathophysiologic alterations (how are these directly and/or indirectly found).

**Prerequisite:** Third semester pre-clinical student in the Penn State PA program. Third course in the interpretive sequence.; Concurrent: PAS 703, PAS 706 , PAS 709 , PAS 712 , PAS 715 , PAS 718

PAS 732: Emergency Medicine Rotation I

4 Credits

PAS 732 Emergency Medicine I is a required course which involves the evaluation and management of patients who present for care in an emergency medicine setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients with an acute life-threatening event. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in an emergency medicine setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how emergency medicine departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an emergency medicine setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

PAS 733: Emergency Medicine Rotation II

4 Credits

PAS 733 Emergency Medicine II is an elective course which involves the evaluation and management of patients who present for care in an emergency medicine setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients with an acute life-threatening event. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in an emergency medicine setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma

personnel. Students will gain an appreciation of how emergency medicine departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the first emergency medicine rotation and the pre-clinical curriculum to the care of patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an emergency medicine setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. Successful completion of PAS 732.;  
**Concurrent:** The student will be enrolled in three clinical preceptorships during each of the clinical

#### PAS 734: Family Medicine Rotation I

4 Credits/Maximum of 4

PAS 734 Family Medicine Rotation I is a foundational course for primary care practice. This course will provide the basis for establishing care of patients throughout their lifespan, from newborn to geriatric care. This rotation involves outpatient management, evaluation, examination of patients and involves students developing differential diagnoses, clinical intervention, the ordering and/or interpretation of diagnostic studies, and development of a treatment plan which is based upon the patient's presenting complaint and current and past problems. Students will make recommendations for treatment involving pharmacology intervention based upon standard of care principles. Students will obtain histories on these patients, perform directed and complete physical examinations, and will present these findings to the clinical preceptors at the site. Students will gain experience with documenting their findings in both written and verbal communication to their preceptors. Students will develop rapport with their patients and develop their skills in patient communication, cultural competency, and patient education.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. This rotation is offered under the umbrella of primary care experiences and is a hallmark for the educational goals for our PA Program

#### PAS 735: Family Medicine Rotation II

4 Credits

PAS 735 Family Medicine Rotation II is a foundational course for primary care practice. This course will provide the basis for establishing care of patients throughout their lifespan, from newborn to geriatric care. This rotation involves outpatient management, evaluation, examination of patients and involves students developing differential diagnoses, clinical intervention, the ordering and/or interpretation of diagnostic studies, and development of a treatment plan which is based upon the patient's presenting complaint and current and past problems. Students will make recommendations for treatment involving pharmacology intervention based upon standard of care principles. Students will obtain histories on these patients, perform directed and complete physical examinations, and will present these findings to the clinical preceptors at the site. Students will gain experience with documenting their findings in both written and verbal communication to their preceptors. Students will develop rapport with their patients and develop their skills in patient communication, cultural competency, and patient education.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. This rotation is offered under

the umbrella of primary care experiences and is a hallmark for the educational goals for our PA Program

#### PAS 737: General Surgery Rotation I

4 Credits

PAS 737 is a required rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a surgical complaint or a patient who is treated in the surgical setting. Students will assist in the operating room and will perform history and physical examinations and surgical consults for patients with a potential surgical complaint. Students will be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students will also play a role in the postoperative management of patients who have undergone surgery. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of surgical patients and operative interventions.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; **Concurrent:** The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

#### PAS 738: General Surgery Rotation II

4 Credits

PAS 738 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a surgical complaint or a patient who is treated in the surgical setting. Students will assist in the operating room and will perform history and physical examinations and surgical consults for patients with a potential surgical complaint. Students will be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students will also play a role in the postoperative management of patients who have undergone surgery. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of surgical patients and operative interventions.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; **Concurrent:** The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

#### PAS 739: Internal Medicine Rotation I

4 Credits

This clinical rotation provides clinical education for students taking care of the adult population. The ultimate goal for students at the end of the clinical educational training is to have students capable of caring for patients throughout their lifespan and this rotational experience provides the student with educational experiences for the adult population which includes the geriatric population. Goals for this rotation include having the student identify, describe and perform the appropriate clinical evaluation including performance of a physical

examination, the development of differential diagnosis, the selection of appropriate diagnostic studies, the development of treatment plans including proper referrals, and performing patient education. Students will gain proficiency in performing oral case presentations and documenting history and physical examination findings. Students will also gain experience with writing admission and hospital orders and discharge summaries, as appropriate according to the setting. The student will gain experience identifying normal and abnormal laboratory values as well as the appropriate use of radiologic and other diagnostic modalities as part of the diagnostic evaluation of the patient.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

PAS 740: Internal Medicine Rotation II

4 Credits

This second internal medicine clinical rotation provides clinical education for students taking care of the adult population. This course is a natural extension of the first internal medicine course, PAS 739. The ultimate goal for students at the end of the clinical educational training is to have students capable of caring for patients throughout their lifespan and this rotational experience provides the student with educational experiences for the adult population which includes the geriatric population. Goals for this rotation include having the student identify, describe and perform the appropriate clinical evaluation including performance of a physical examination, the development of differential diagnosis, the selection of appropriate diagnostic studies, the development of treatment plans including proper referrals, and performing patient education. Students will gain proficiency in performing oral case presentations and documenting history and physical examination findings. Students will also gain experience with writing admission and hospital orders and discharge summaries, as appropriate according to the setting. The student will gain experience identifying normal and abnormal laboratory values as well as the appropriate use of radiologic and other diagnostic modalities as part of the diagnostic evaluation of the patient.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. This is the second course in the primary care sequence. This course will occur following the completion of the first internal medicine

PAS 741: Mental Health Rotation I

4 Credits

This course provides clinical training involving the evaluation and treatment of those with mental health disorders.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

PAS 742: Mental Health Rotation II

4 Credits

PAS 742 Mental Health Rotation II is an elective course in the clinical curriculum. This course and rotation provides clinical experiences for students in inpatient and outpatient settings where the student will encounter patients with a mental health or psychological complaint.

Students will become acquainted with manifestations of various forms of psychopathology. The emphasis of this course is the performance of a complete psychiatric examination which includes the performance of a mental state examination. Students will develop the ability to classify patients with a psychiatric complaint according to the Axis classification. Students will develop the ability to manage psychosocial problems that the patients face along with the ability to navigate the health care system and get these patients much-needed support in the community. This clinical experience integrates previous learning and actual clinical practice, while working on hospital wards and outpatient clinics. It emphasizes the behavioral and psychosocial aspects of mental illness. Students will be able to apply what was learned in the preclinical educational curriculum during the behavioral medicine course with the actual practice which deals with caring for patients with a mental health or psychosocial complaint. Students will be given patient navigation experience from both a specialty and primary care perspective and will gain an appreciation as to how emotional stress and mental illness can impact the entire patient and not just the brain of the patient. Students will educate patients and their families on the psychosocial elements and physiologic processes that occur in the setting of psychiatric disease. This course meets the overall program goal of addressing psychosocial needs of our patients in various settings and with various complaints throughout the lifespan.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

PAS 743: Pediatrics I

4 Credits

PAS 743 Pediatrics I is a required rotation in the clinical curriculum. This clinical rotation involves the evaluation and management of patients in the pediatric age population. This rotation will emphasize the role of preventive medicine practice such as anticipatory guidance and the role of vaccination in prevention of illness. Developmental screening of the pediatric population will occur as part of this rotation and students will recognize the key milestones and the typical range of ages when these milestones are achieved. This rotation will address the typically encountered problems and medical condition of newborns and children through adolescence. Students gain confidence in evaluating, diagnosing, and treating common pediatric diseases and become skilled in third-party histories and pediatric physical examinations. Well-baby care, immunizations, nutrition, management of the child who has been subject to abuse or maltreatment, and preventive techniques are an integral part of this rotation. The rotation emphasizes normal and abnormal growth and development along with assessment, communication, and physical examination skills in the diagnosis and treatment of pediatric situations. Students develop familiarity with inpatient and/or outpatient pediatric problems and gain exposure to the pediatric patient who is in need of specialty referral. This course helps to achieve the PA Program's goal of graduating clinically competent physician assistants who are capable of caring for patients throughout their lifespan in various types of clinical settings and treating these patients with cultural competence, empathy, and with a professional manner.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

## PAS 744: Pediatrics II

4 Credits

PAS 744 Pediatrics II is an elective rotation in the clinical curriculum. This clinical rotation involves the evaluation and management of patients in the pediatric age population. This rotation will emphasize the role of preventive medicine practice such as anticipatory guidance and the role of vaccination in prevention of illness. Developmental screening of the pediatric population will occur as part of this rotation and students will recognize the key milestones and the typical range of ages when these milestones are achieved. This rotation will address the typically encountered problems and medical condition of newborns and children through adolescence. Students gain confidence in evaluating, diagnosing, and treating common pediatric diseases and become skilled in third-party histories and pediatric physical examinations. Well-baby care, immunizations, nutrition, management of the child who has been abused or maltreated, and preventive techniques are an integral part of this rotation. The rotation emphasizes normal and abnormal growth and development along with assessment, communication, and physical examination skills in the diagnosis and treatment of pediatric situations. Students develop familiarity with inpatient and/or outpatient pediatric problems and gain exposure to the pediatric patient who is in need of specialty referral. This course helps to achieve the PA Program's goal of graduating clinically competent physician assistants who are capable of caring for patients throughout their lifespan in various types of clinical settings and treating these patients with cultural competence, empathy, and with a professional manner. As an elective rotation, this course is a continuation and deepening of the knowledge and the skills that were gained during the PAS 743 Pediatrics I rotation.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

## PAS 745: Women's Health I

4 Credits

PAS 745 Women's Health Rotation will provide students with experience in assessing, examining, evaluating, and treating the female population from the teenage population through the geriatric female. The students will identify, describe and perform the appropriate clinical evaluation including physical examination, ordering of appropriate diagnostic studies, formulate a differential diagnosis based upon these findings, and develop a treatment plan. The treatment plan will specifically include the proper referrals and applicable patient and family teaching. Students will become familiar with evaluating and treating patients with contraceptive and fertility concerns, prenatal care, and care of the patient following delivery. Although not a requirement for this rotational experience, students may be afforded the opportunity for care of the pregnant patient during labor and delivery. Whether a clinical experience occurs in the delivery room setting, students will be able to educate the patient regarding the labor and delivery process. Students will discuss preventive health measures for female patients that have clinical relevance in the health care setting such as menopausal management, osteoporosis, vaginal health throughout the lifespan, and urological difficulties that occur with aging. Students will practice counseling and education techniques for the female population in the preteen to adult lifespan. As a result of this rotation, students will capably perform a female physical examination which will include the pelvic examination.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

## PAS 746: Women's Health II

4 Credits

PAS 745 Women's Health Rotation will provide students with experience in assessing, examining, evaluating, and treating the female population from the teenage population through the geriatric female. The students will identify, describe and perform the appropriate clinical evaluation including physical examination, ordering of appropriate diagnostic studies, formulate a differential diagnosis based upon these findings, and develop a treatment plan. The treatment plan will specifically include the proper referrals and applicable patient and family teaching. Students will become familiar with evaluating and treating patients with contraceptive and fertility concerns, prenatal care, and care of the patient following delivery. Although not a requirement for this rotational experience, students may be afforded the opportunity for care of the pregnant patient during labor and delivery. Whether a clinical experience occurs in the delivery room setting, students will be able to educate the patient regarding the labor and delivery process. Students will discuss preventive health measures for female patients that have clinical relevance in the health care setting such as menopausal management, osteoporosis, vaginal health throughout the lifespan, and urological difficulties that occur with aging. Students will practice counseling and education techniques for the female population in the preteen to adult lifespan. As a result of this rotation, students will capably perform a female physical examination which will include the pelvic examination..

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; Concurrent: The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters. Since stud

## PAS 747: Internal Medicine III Rotation

4 Credits

This third internal medicine clinical rotation provides clinical education for students taking care of the adult population. This course is a natural extension of the first two internal medicine courses, PAS 739 and PAS 740. This course is available for the students to take as an elective course. This elective course is directed at students who wish to pursue career training in the primary care sector. The ultimate goal for students at the end of the clinical educational training is to have students capable of caring for patients throughout their lifespan and this rotational experience provides the student with educational experiences for the adult population which includes the geriatric population. Goals for this rotation include having the student identify, describe and perform the appropriate clinical evaluation including performance of a physical examination, the development of differential diagnosis, the selection of appropriate diagnostic studies, the development of treatment plans including proper referrals, and performing patient education. Students will gain proficiency in performing oral case presentations and documenting history and physical examination findings. Students will also gain experience with writing admission and hospital orders and discharge summaries, as appropriate according to the setting. The student will gain experience identifying normal and abnormal laboratory values as well as the appropriate use of radiologic and other diagnostic modalities as part of the diagnostic evaluation of the patient.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. This is the second course in the primary care sequence. This course will occur following the completion of the first two internal medi

PAS 748: Family Medicine Rotation III

4 Credits

PAS 7348 Family Medicine Rotation III is a foundational course for primary care practice. This elective course will provide the basis for establishing care of patients throughout their lifespan, from newborn to geriatric care. This rotation involves outpatient management, evaluation, examination of patients and involves students developing differential diagnoses, clinical intervention, the ordering and/or interpretation of diagnostic studies, and development of a treatment plan which is based upon the patient's presenting complaint and current and past problems. Students will make recommendations for treatment involving pharmacology intervention based upon standard of care principles. Students will obtain histories on these patients, perform directed and complete physical examinations, and will present these findings to the clinical preceptors at the site. Students will gain experience with documenting their findings in both written and verbal communication to their preceptors. Students will develop rapport with their patients and develop their skills in patient communication, cultural competency, and patient education.

**Prerequisite:** Penn State Graduate Physiciana Assistant Student enrolled in the Clinical Education Curriculum. This rotation is offered under the umbrella of primary care experiences and is a hallmark for the educational goals for our PA Program

PAS 749: Endocrinology I

4 Credits/Maximum of 4

PAS 749 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with an endocrine complaint or a patient who is treated in the endocrinology setting. Students may assist in the endocrinology practice and will perform history and physical examinations and medical consultations for patients with an endocrinologic complaint. Students may be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. . These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a endocrinologic disorders.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 750: Gastroenterology I

4 Credits

PAS 750 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a burn injury or specific skin condition. Students may assist in the operating room and will perform history and physical examinations and medical consultations for patients with gastroenterologic injuries or disorders. Students may be part of the preoperative planning for a patient about to undergo surgery which

includes the identification of indications and contraindications for a patient about to undergo surgery or procedures. Students may also play a role in the postoperative management of patients who have undergone surgery or procedures. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a gastroenterology complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 751: Ear, Nose and Throat Elective Rotation

4 Credits

PAS 751 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with an ears, nose or throat complaint for a patient in the otorhinolaryngology setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with ears, nose and throat related complaints. Students may be part of the pre-treatment planning for a patient who requires surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students may also play a role in the post treatment management of patients who have undergone ears, nose and throat related treatments. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient in the otorhinolaryngology setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 752: Hematology & Oncology Elective Rotation

4 Credits

PAS 752 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a hematological or oncological complaint for a patient who is treated in the hematology and oncology setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with a hematology or oncology related complaint. Students may be part of the pre-treatment planning for a patient about to undergo chemotherapy or radiation which includes the identification of indications and contraindications for a patient about to undergo chemotherapy or radiation treatments. Students may also play a role in the post treatment management of patients who have undergone chemotherapy and/or radiation treatments. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a hematological or oncological complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 753: Orthopedics & Sports Medicine Preceptorship

4 Credits/Maximum of 4

PAS 753 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a musculoskeletal complaint or a patient

who is treated in the orthopedic setting. Students may assist in the operating room and will perform history and physical examinations and medical consultations for patients with a musculoskeletal complaint. Students may be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students may also play a role in the postoperative management of patients who have undergone surgery. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a musculoskeletal complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 754: Trauma Elective Rotation

4 Credits

PAS 754 Trauma is an elective course which involves the evaluation and management of patients who present for care in a trauma setting. Students will gain experience in their ability to evaluate, examine, manage, and educate patients who have a complaint related to a traumatic injury. Students will gain proficiency in identifying patients with clinical presentations of traumatic injuries that may need more immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how trauma services function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complicated trauma-related health care needs. Students will also gain exposure to the patient care mix for people who are presenting to a trauma setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 755: Dermatology Elective Rotation

4 Credits

PAS 755 Dermatology is an elective course which involves the evaluation and management of patients who present for care in a dermatologic setting. Students will gain experience in their ability to evaluate, examine, manage, and educate patients who have a complaint related to the integumentary system. Students will gain proficiency in identifying patients with clinical presentations of lesions that may need more immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how dermatologic practices function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have dermatologic health care needs. Students will also gain exposure to the patient care mix for people who are presenting to a dermatology setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 756: Summative Experience

1 Credits

This course is a capstone course that will provide the final comprehensive assessment for students prior to graduation.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum; **Concurrent:** The student will ordinarily have completed both the pre-clinical and clinical training in the PA program with this class pro

PAS 757: Interventional Radiology Elective Rotation

4 Credits

PAS 757 Interventional Radiology is an elective course which involves the evaluation and management of patients who present for care in an interventional radiologic setting. Students will gain experience in their ability to evaluate, examine, manage, and educate patients who have a complaint related to the vascular, GI, GU, musculoskeletal, and integumentary systems. Students will gain proficiency in identifying patients with clinical presentations that may need more immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how interventional radiology providers function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have vascular, GI, GU, musculoskeletal, and integumentary health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an interventional radiologic setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 758: Cardiology Preceptorship

4 Credits

PAS 758 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a cardiovascular complaint or a patient who is treated in the cardiology setting. Students may assist in the cardiovascular suite and will perform history and physical examinations and medical consultations for patients with a cardiovascular complaint. Students may be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students may also play a role in the postoperative management of patients who have undergone surgery who have high cardiovascular risk or cardiovascular complications. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a cardiovascular complaint or complication.

PAS 759: Plastic and Reconstructive Surgery I

4 Credits

PAS 759 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the



student to care for patients with a plastic and reconstructive surgery complaint treated in the plastic and reconstructive surgery setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with a plastic and reconstructive surgery related complaint. Students may be part of the pre-treatment planning for a patient about to undergo plastic and reconstructive surgery which includes the identification of indications and contraindications for a patient about to undergo plastic and reconstructive surgery. Students may also play a role in the post treatment management of patients who have undergone plastic and reconstructive surgical procedures. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a plastic and reconstructive surgery related complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 760: Cardiothoracic (CT) Surgery I Elective Rotation

4 Credits

PAS 760 Cardiothoracic (CT) Surgery I is an optional course offered as an elective Cardiothoracic (CT) Surgery rotation which involves the evaluation and management of patients who present for care in a Cardiothoracic (CT) Surgery setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients in a Cardiothoracic (CT) Surgery setting. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in a Cardiothoracic (CT) Surgery setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how Cardiothoracic (CT) Surgery departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and Course Justification urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to a Cardiothoracic (CT) Surgery setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. **CONCURRENT:** The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters.

PAS 761: Neurology Rotation

4 Credits

PAS 759 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a neurology complaint for a patient who is treated in the neurology setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with a neurology related complaint. Students may be part of the pre-treatment planning for a patient about to undergo neurology which includes the identification of indications and contraindications

for a patient with a neurological condition. Students may also play a role in the post treatment management of patients who have undergone neurological treatments. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a neurological related complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 762: Critical Care Medicine I Elective Rotation

4 Credits

PAS 762 Critical Care Medicine I is as an elective rotation which involves the evaluation and management of patients who present for care in a Critical Care Medicine setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients in a Critical Care Medicine setting. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in a Critical Care Medicine setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how Critical Care Medicine departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to a Critical Care Medicine setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. **CONCURRENT:** The student will be enrolled in three clinical preceptorships during each of the clinical educational semesters.

PAS 764: Palliative Medicine I Elective Rotation

4 Credits

PAS 764 Palliative Medicine I is as an elective rotation which involves the evaluation and management of patients who present for care in an Palliative Medicine setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients in a Palliative Medicine setting. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in an Palliative Medicine setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how Palliative Medicine departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an Palliative Medicine setting and may gain exposure to the typical

roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 765: Burn Surgery Elective Rotation

4 Credits

PAS 765 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a burn injury or specific skin condition. Students may assist in the operating room and will perform history and physical examinations and medical consultations for patients with burn injuries. Students may be part of the preoperative planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient about to undergo surgery. Students may also play a role in the postoperative management of patients who have undergone surgery. These exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical settings which includes the care of the patient with a musculoskeletal complaint or complication.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 766: Urgent Care I Rotation

4 Credits

PAS 766 Urgent care I is an optional course that falls under the ambulatory care rotation which involves the evaluation and management of patients who present for care in an urgent care setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients in an urgent care setting. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care is delivered in an urgent care setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how urgent care departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an urgent care setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 767: Urgent Care II Elective Rotation

4 Credits

PAS 767 Urgent Care II is as an elective rotation which involves the evaluation and management of patients who present for care in an Urgent Care setting. Students will gain experience in their ability to stabilize, evaluate, and manage patients in a Urgent Care setting. Students will gain proficiency in identifying patients with clinical presentations that need immediate attention and those conditions which can be treated in a less urgent manner. Students will gain an appreciation of how care

is delivered in an Urgent Care setting which has significant differences from the care that is rendered in other health care settings, for example, the immediate availability of clinical interventions such as diagnostic imaging, electrocardiography, laboratory studies, and the availability of consultants such as surgeons and trauma personnel. Students will gain an appreciation of how Urgent Care departments function in the overall delivery of health care services within the US Health care delivery system. Students will be able to apply knowledge and skills from the pre-clinical curriculum to these patients who often have complex and urgent health care needs. Students will also gain exposure to the patient care mix for people who are presenting to an Urgent Care setting and may gain exposure to the typical roles that certified physician assistants play in the delivery of care in this setting.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 768: Infectious Disease

4 Credits/Maximum of 4

PAS 768 is an elective rotation in the clinical curriculum of the Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with an infectious disease complaint. This rotation will provide students with an opportunity to evaluate, examine, manage, and educate patients who have a complaint related to infection. The student will gain experience in the management of patients with infectious disease on an acute and chronic basis. Patients may be evaluated in both an inpatient and/or outpatient setting.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. Concurrent: Each clinical rotation is 4 weeks in length and worth 4 credits.

PAS 769: Neurosurgery I

4 Credits

PAS 769 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a neurology complaint who referred for treatment in the neurosurgery setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with a neurosurgery related complaint. Students may be part of the pre-treatment planning for a patient about to undergo neurosurgery which includes the identification of indications and contraindications for a patient with a neurological condition. Students may also play a role in the post treatment management of patients who have undergone related surgical procedures. The exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical and surgical settings which includes the care of the patient with a neurological related complaint that may require surgical intervention.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 770: Nephrology Rotation

4 Credits

PAS 770 is an elective rotation in the clinical curriculum of the Penn State Physician Assistant Program. This rotation will provide students with the requisite knowledge and clinical experiences for preparing the student to care for patients with a nephrology complaint who is

referred for treatment in the nephrology setting. Students may assist with procedures and will perform history and physical examinations and medical consultations for patients with a nephrology related complaint. Students may be part of the pre-treatment planning for a patient about to undergo surgery which includes the identification of indications and contraindications for a patient with a nephrology condition. Students may also play a role in the post treatment management of patients who have undergone related surgical procedures. The exposures that the students have during this rotation will prepare them for their clinical role in taking care of patients throughout their lifespan in various types of clinical and surgical settings which includes the care of the patient with a nephrology related complaint that may require surgical intervention and / or dialysis.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 771: Critical Thinking and Reasoning

1 Credits/Maximum of 1

This course provides meaningful discussion of common patient presentations in various clinical settings. Students will apply critical thinking and reasoning skills in developing evaluation strategies, differential diagnoses, treatment plans, and patient education strategies based upon patient presentations in each scenario. With student group discussions facilitated by faculty, students can adjust their thought processes based upon further case scenario information that is presented as the case evolves. Course will be four week in length with group meetings taking place in at least three of those four weeks. Students will also independently work through selected case scenarios that are written in order to develop critical thinking and reasoning. As students progress through these cases, they will address bias and premature closure. Course is an elective which students can take in both the preclinical and clinical portions of the PA curriculum. Course is offered on a pass/fail basis.

**Prerequisite(s):** Completion of Preclinical curriculum courses

PAS 772: Topics in At-Risk Populations

1 Credits

The focus of this Topics course is designed to highlight healthcare needs of a variety of at risk populations including detecting and reporting child and elderly abuse and Act 31 certification, opioid use disorders and opioid training certification, Medications for Addiction Treatment certification, stroke detection and NIHSS Group B certification. The course will also include current public health initiatives and humanities in medicine topics.

PAS 773: Career Exploration and Synthesis I

1-2 Credits/Maximum of 2

PAS 773 Career Exploration and Synthesis I will be completed by all clinical year physician assistant students during their first or second semester of the clinical phase. Each selective is a clinical experience in a medical or surgical discipline of their choice. Students will explore various career options, extend clinical experiences and synthesize material they have learned, and allow for individualization of learning in the rotations. This course is designed to provide students a brief experience in a subspecialty of their choice to further knowledge and technical skills. This course will help students in their professional role development, as they will be exposed to a select area briefly, yet in depth. Each of these experiences will be unique.

PAS 774: Career Exploration and Synthesis II

1-2 Credits/Maximum of 2

PAS 774 Career Exploration and Synthesis II will be completed by all clinical year students during the third semester of the clinical phase. Each selective is a clinical experience in a medical or surgical discipline of their choice. Students will explore various career options, extend clinical experiences and synthesize material they have learned, and allow for individualization of learning in the rotations. This course is designed to provide students a brief experience in a subspecialty of their choice to further knowledge and technical skills. This course will help students in their professional role development, as they will be exposed to a select area briefly, yet in depth. Each of these experiences will be unique.

PAS 776: Medicine Specialty Rotation

4 Credits

The goal of this elective rotation is to give the student additional medical training during the clinical year in a specialty related to their area of interest. During this rotation, the student will develop a fundamental knowledge base in major disease processes in the assigned medical specialty. The will improve upon their clinical decision-making skills and the ability to acquire, interpret, synthesize, and record clinical information required to define, understand, and manage patient problems in the assigned medical specialty. They will improve the skills necessary to present patients to faculty, residents and peers in a clinical setting. In addition, student will continue to work on their interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates. This elective will allow for student exposure to different areas of medicine they may wish to pursue following graduation, and help each student determine their own areas of interest, strengths and weaknesses.

**Prerequisite:** Penn State Physician Assistant Student in Clinical Education Curriculum. Concurrent: The student will be enrolled in clinical preceptorships during each of the clinical educational semesters.

PAS 777: Surgical Specialty Rotation

4 Credits

The goal of this elective rotation is to give the student additional medical training during the clinical year in a specialty related to their area of interest. During this rotation, the student will develop a fundamental knowledge base in major disease processes in the assigned medical specialty. The will improve upon their clinical decision-making skills and the ability to acquire, interpret, synthesize, and record clinical information required to define, understand, and manage patient problems in the assigned medical specialty. They will improve the skills necessary to present patients to faculty, residents and peers in a clinical setting. In addition, student will continue to work on their interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates. This elective will allow for student exposure to different areas of medicine they may wish to pursue following graduation, and help each student determine their own areas of interest, strengths and weaknesses.

**Prerequisite:** Penn State Graduate Physician Assistant Student enrolled in the Clinical Education Curriculum. Concurrent: The student will be enrolled in clinical preceptorships during each of the clinical educational semesters.

**PAS 778: Primary Care Experience I**

2 Credits/Maximum of 2

PAS 778 Primary Care Experience I will be completed by all clinical year students during the third semester of the clinical phase. Each experience will occur in a primary care discipline of their choice. Students will explore various career options, extend clinical experiences and synthesize material they have learned, and allow for individualization of learning in the rotations. This course is designed to provide students additional time for development in the primary care setting. This course will help students in their professional role development, as they will be exposed to a select area briefly, yet in depth.

**Prerequisite:** Completion of Preclinical curriculum courses. Corequisite: The student will be enrolled in clinical preceptorships during clinical year semesters.

**PAS 779: Primary Care Experience II**

2 Credits/Maximum of 2

PAS 779 Primary Care Experience II will be completed by clinical year students during the third semester of the clinical phase. Each experience in a primary care discipline of their choice. Students will explore various career options, extend clinical experiences and synthesize material they have learned, and allow for individualization of learning in the rotations. This course is designed to provide students additional time for development in the primary care setting. This course will help students in their professional role development, as they will be exposed to a select area briefly, yet in depth.

**Prerequisite:** Completion of Preclinical curriculum courses. Concurrent: The student will be enrolled in clinical preceptorships during clinical year semesters.

**PAS 781: Clinical Skills II**

2 Credits/Maximum of 2

This course is the second course in a three-part clinical skills course series that will place emphasis on interactive and hands-on learning to prepare the graduate Physician Assistant in performing routine therapeutic procedures to manage common disease entities. In addition to discussing the indications, contraindications, and complications of each procedure, students will demonstrate the ability to perform routine procedures using appropriate technique. Furthermore, this course will provide students with an in-depth evaluation of electrocardiogram (EKG) and radiologic interpretation skills with application to clinical cases. Students will be expected to utilize patient communication and examination skills throughout all skill performance evaluations to promote student experience in providing patient education in a culturally-sensitive manner. This course will occur in the same semester as clinical medicine II, pathophysiology II, pharmacology II, pharmacotherapeutics II, and history/physical examination II. All courses will closely align in a series of system-based modules that promote horizontal and vertical integration of the PA program curriculum and prepare students for a comprehensive education prior to clinical rotations. This course will be held in a lecture type of classroom in a large group discussion format. This course will be offered every fall semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort. Student evaluation will be in the form of written examinations,

demonstration of procedural skills, professionalism, and documentation of procedure notes.

**Prerequisite:** Student admitted to the preclinical physician assistant program having fulfilled the requirements for admission to this program. Corequisite: PAS 703, PAS 705, PAS 708, PAS 711, PAS 714, PAS 717, SHS 711

**PAS 782: Clinical Skills III**

2 Credits/Maximum of 2

This course is the third course in a three-part clinical skills course series that will place emphasis on interactive and hands-on learning to prepare the graduate Physician Assistant in performing routine therapeutic procedures to manage common disease entities. In addition to discussing the indications, contraindications, and complications of each procedure, students will demonstrate the ability to perform routine procedures using appropriate technique. Furthermore, this course will provide students with an in-depth evaluation of emergency medicine, trauma, neurologic, and women's health skills with application to clinical cases. Students will be expected to utilize patient communication and examination skills throughout all skill performance evaluations to promote student experience in providing patient education in a culturally-sensitive manner. This course will occur in the same semester as clinical medicine III, pathophysiology III, pharmacology III, pharmacotherapeutics III, and history/physical examination III. All courses will closely align in a series of system-based modules that promote horizontal and vertical integration of the PA program curriculum and prepare students for a comprehensive education prior to clinical rotations. This course will be held in a lecture type of classroom in a large group discussion format. This course will be offered every spring semester for the physician assistant student in the Penn State College of Medicine Physician Assistant Program. Expected enrollment is for 30 students in this class cohort. Student evaluation will be in the form of written examinations, demonstration of procedural skills, professionalism, and documentation of procedure notes.

**Prerequisite:** Student admitted to the preclinical physician assistant program having fulfilled the requirements for admission to this program. Concurrent: PAS 706, PAS 709, PAS 712, PAS 715, PAS 718, MEP 721, PAS 719, SHS 711, PAS

## Primary Care Medicine (PCMED)

**PCMED 700: Primary Care Preceptorship**

1 Credits

Participation in primary care settings of family medicine, general internal medicine, and general pediatrics.

**Prerequisite:** FCMED701; Concurrent: MED 701, MED 702

**PCMED 731: Primary Care Clerkship**

5 Credits

This course provides an opportunity for students to learn the principles of primary health care in rural, small town, and/or medically underserved communities.

**Prerequisite:** third year standing

## PCMED 740: Primary Care Area of Concentration

5 Credits/Maximum of 5

The Primary Care Area of Concentration (AOC) will address a shortage in students pursuing careers in primary care by providing medical students the opportunity to engage in the primary care community at Penn State. Students will develop skills and knowledge in team-based care across disciplines, population health, primary care research, community engagement, and advocacy. Additionally, students will develop longitudinal relationships with a group of peers and mentors invested in primary care. Medical students will be eligible to apply for this AOC at the end of phase II to participate in focused mentorship and activities in career exploration, residency applications, and community based projects during phases III and IV.

**Prerequisite:** Successful completion of Phase I and II, an application to the program completed prior to the start of Phase II Concurrent: Other Phase III and IV electives and requirements

## PCMED 741: Primary Care Elective - Medical Director-Practice Management Fishburn Family Medicine

5 Credits

This module was developed for those students interested in gaining experience working with a medical director in primary care to learn about managing a practice and with family physicians, nurse practitioners and physician assistants in primary care.

**Prerequisite:** successful completion of third year primary care clerkship

## PCMED 742: Primary Care Longitudinal Advanced Elective

5 Credits

Longitudinal outpatient experience caring for patients over time (once/week over six months) emphasizing continuity of care.

**Prerequisite:** Limited to students enrolled in Penn State College of Medicine who have successfully completed the third year.

## PCMED 743: Primary Care in PA

5 Credits

Four-week clinical experience with selected primary care physicians in PA.

**Prerequisite:** Limited to students enrolled in Penn State College of Medicine who have successfully completed the third year.

## PCMED 744: Primary Care, Continental U.S. Sites

5 Credits

Four-week Primary Care related experience in an outpatient clinic within the continental U.S. that meets the student's individual needs.

**Prerequisite:** Limited to students enrolled in Penn State College of Medicine who have successfully completed the third year.

## PCMED 745: Primary Care, Indian Health Service

5 Credits

Four-week clinical experience with primary care physicians located at Indian Health Service sites.

**Prerequisite:** Limited to students enrolled in Penn State College of Medicine who have successfully completed the third year.

## PCMED 746: Primary Care, International

5 Credits

Four-week clinical experience with primary care physicians located at International sites.

**Prerequisite:** Limited to students enrolled in Penn State College of Medicine who have successfully completed the third year.

## PCMED 747: Primary Care Elective - Leadership in Community Module

5 Credits

This module was developed for those who have both the interest and potential to become leaders in the health care of hi-risk children and their families, and to meet the challenges and opportunities of community-oriented primary care.

**Prerequisite:** successful completion of third year primary care clerkship

## PCMED 748: Primary Care Elective - Penn State Orthopaedics and Sports Medicine

5 Credits

This module was developed for those students interested in gaining experience working in the areas of primary care sports medicine.

**Prerequisite:** successful completion of third year primary care clerkship

## PCMED 749: Primary Care Sports Medicine, Hershey (4th year)

5 Credits

This course provides exposure to concepts utilized in the evaluation and initial treatment of common sports medicine conditions.

**Prerequisite:** successful completion of all third year core clerkships

## Problem-Based Learning Facilitation - MD (PBL)

## PBL 720: Case Development in Medical Education

5 Credits

This course will teach the major steps in creating a clinical case scenario.

**Prerequisite:** successful completion of Years 1-3 of the medical curriculum

## PBL 743: Problem-based Learning Facilitation

5 Credits

Development of skills in facilitation of small group learning (PBL) and introductory understanding of educational theory supporting PBL.

**Prerequisite:** No course failures. A HP or H grade in 1 course and 1 clerkship. No noted unprofessional behaviors in PBL. A first-time pass in all NBME subject exams and USMLE Step I. A recommendation letter. A course director signature.

## Psychiatry - MD (PSCHT)

## PSCHT 700: Psychiatry Clinical Clerkship

5 Credits

Clinical experience in the management of patients with psychiatric disorders.

**Prerequisite:** limited to medical students who have completed required preclinical courses

## PSCHT 771: Adult Psychiatry Inpatient Acting Internship

5 Credits/Maximum of 5

Students are assigned selected adult inpatients and receive close individual supervision in diagnosis and treatment, including psychotherapy and drug therapy.

**Prerequisite:** Successful completion of the third year core clerkships

## PSCHT 773: Child Psychiatry Inpatient Acting Internship

5 Credits/Maximum of 5

Students are involved, under faculty supervision, in diagnostic evaluation and treatment planning and implementation of selected child and adolescent outpatients.

**Prerequisite:** Successful completion of third year core clerkships

## PSCHT 774: Child Psychiatry Outpatient Elective

5-15 Credits/Maximum of 15

Students are involved, under faculty supervision, in diagnostic evaluation and treatment planning and implementation of selected child and adolescent inpatients.

**Prerequisite:** PSCHT700

## PSCHT 775: Consultation/Liaison Psychiatry Elective

5-15 Credits/Maximum of 15

Students evaluate medical/surgical patients where psychiatric consultation is requested and receive supervision in diagnosis and short-term psychiatric treatment.

**Prerequisite:** PSCHT700

## PSCHT 776: Application of Health Systems Science within Geriatric Psychiatry

2.5 Credits/Maximum of 2.5

The application of HSS within Geriatric Psychiatry elective is a two-week elective course designed to provide students an opportunity to apply the various aspects of HSS within the subspecialty of geriatric psychiatry. The elective is aimed at those students looking to expand their knowledge in HSS, as well as their knowledge of the geriatric population with severe mental illness. Students will be embedded within the inpatient psychiatric treatment team and assigned 1-2 patients whose cases they can use as case studies to further explore the core domains of HSS, with a particular emphasis on population health, healthcare structures and processes, and teamwork and interprofessional collaboration. There will also be a community engagement activity in which the student will spend a half day working with an Adult Protective Services worker through the Dauphin County Area on Aging in the community.

## PSCHT 783: Research in Physiology and Pathology of Sleep

5-15 Credits/Maximum of 15

Participation in experimental and clinical studies of normal and disordered sleep and the evaluation, diagnosis and treatment of sleep disorders.

**Prerequisite:** completion of second-year medical school

## PSCHT 796: Psychiatry Individual Studies

5 Credits/Maximum of 5

Creative projects including nonthesis research, supervised on an individual basis and which fall outside the scope of formal courses.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## PSCHT 797: Psychiatry Special Topics

5 Credits/Maximum of 5

Psychiatry Special Topics.

**Prerequisite:** successful completion of 3rd year core clerkships

## Pulmonary Medicine - MD (PLM)

## PLM 726: Pulmonary Medicine

3 Credits

Some of the areas studied will be: Symptoms and Signs of Respiratory Disease; Use of Common Diagnostic Tools to Evaluate Patients; Pathophysiology; COPD; Bronchial Asthma; Hypertension; Thromboembolism; Pediatric Pulmonary Disease; Infections; Diffuse Infiltrative Pulmonary Diseases; Acute and Chronic Respiratory Failure; Acute Respiratory Distress Syndrome; Lung Cancer. Pathology and Clinical Aspects; Environmental and Occupational Lung Disease.

**Prerequisite:** successful completion of MS Year I

## Radiology (RAD)

### RAD 700: Pediatric Radiology

5 Credits/Maximum of 5

Tutorial course emphasizing interpretation, clinical correlation, indications, and limitations of imaging studies used in the evaluation of infants and children.

**Prerequisite:** first and second years of medical school; third year of medical school recommended but not required

### RAD 771: General Radiology–Clinical Elective

5 Credits/Maximum of 5

Clinical elective including experience in diagnostic radiology, film interpretation, nuclear medicine, and radiation therapy.

**Prerequisite:** completion of first two years of medical school

### RAD 772: Radiology Advanced Elective

5 Credits/Maximum of 5

Clinical experience in interpreting radiographs and imaging studies, , fluoroscopy, dictating and signing radiologic reports, and providing consultative services.

**Prerequisite:** written permission by the department of radiology

### RAD 773: Interventional Radiology

5 Credits/Maximum of 5

The Interventional Radiology (RAD 773) elective incorporates Patient Care, Medical Knowledge, Practice-based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, and Systems-based Practice. Key competencies students develop over the course of medical school and the medical knowledge gained with completion of the prerequisite General Radiology (RAD771) elective are applied to the clinical practice of Interventional Radiology. Interventional Radiology is an invaluable resource to modern healthcare, providing minimally-invasive, image-guided procedures which allow for diagnosis and treatment of various conditions. The types of procedures and their potential clinical applications offered by Interventional Radiology has greatly increased the need for unique clinical expertise and has led for it to become its own specialty. Interventional Radiology is utilized by nearly every clinical subspecialty, allowing an Interventional Radiologist to be exposed to a variety of clinical conditions and patient populations. Because of this, the elective can be beneficial for any student, regardless of career choice. Major objectives of the elective are to expose students to the wide range of procedures utilizing various imaging modalities, learn about indications and contraindications for commonly encountered procedures, gain experience with the pre-procedural assessment and post-procedural management involved with the clinical care of patients, understand the importance of radiation and patient safety practices in the procedural suite. Over the course of the 4-week elective the topics to be discussed are Patient-Centered Care, Radiologic Diagnosis and Treatment, Procedural Considerations, and Safety

**Prerequisites:** RAD 771

### RAD 774: Radiation Oncology Elective (3rd or 4th year)

5 Credits/Maximum of 5

This course provides exposure to the scope of clinical Radiation Oncology.

**Prerequisite:** successful completion of the 2nd year of medical school

### RAD 774A: Radiation Oncology Elective (3rd year)

2.5 Credits

This course provides 2 week exposure to the scope of clinical Radiation Oncology.

**Prerequisite:** successful completion of the 2nd year of medical school

### RAD 795: Virtual General Radiology, phase III

5 Credits/Maximum of 5

This General Radiology RAD 771 Virtual Radiology Elective incorporates Patient Care, Medical Knowledge, Practice-based Learning and Improvement, Interpersonal and Communication Skills, Professionalism, and Systems-based Practice. Key competencies that medical students should achieve in radiology are refined over the four years of medical school and this elective will utilize multiple teaching methods to reinforce and teach the student some of these competencies in a remote clinical learning environment. Diagnostic radiology has become an integral part in the assessment of health, diagnosis of disease and treatment of patients. The elective exposes the student to all modalities currently used in diagnostic imaging. Major objective of the elective are the understanding of the radiology safety issues to patient and medical personnel, indications and contraindications for radiological studies and procedures and the cost-effective radiological work-up of various clinical conditions. Another major aim of the course is to teach issues of relevance for patient preparation for radiologic studies and procedures. Approach to the interpretation of various radiology studies and recognition of common emergency radiology findings will also be addressed. For these reasons, the elective is of potential major benefit for any student, whatever his or her ultimate career objective may be. Over the course of this 4-week elective, the topics discuss include safety, appropriateness, film interpretation, and importance of expediting and executing patient care when emergent radiologic findings are diagnosed.

### RAD 796: Radiology Individual Studies

5 Credits/Maximum of 5

Creative projects including nonthesis research, supervised on an individual basis and which fall outside the scope of formal courses.

### RAD 796A: Radiology Individual Studies for 3rd year Medical Students

2.5 Credits

Radiology Individual Studies for 3rd Year Medical Students.

**Prerequisite:** successful completion of one 3rd year core clerkship

RAD 797: Radiology Special Topics

5 Credits/Maximum of 5

Formal courses given infrequently to explore, in depth, a comparatively narrow subject which may be topical or of special interest.

RAD 797A: Radiology MSK

2.5 Credits

Formal courses given infrequently to explore, in-depth, a comparatively narrow subject which may be topical or of special interest.

## Renal Medicine - MD (REN)

REN 713: Renal Medicine

3 Credits

Course provides exposure to basic concepts in histology/pathology, biochemistry, physiology and clinical medicine related to fluid, electrolyte and acid/base homeostasis.

**Prerequisite:** must have completed all preceding course work in the first year of medical school

REN 728: Hematology

2.5 Credits

Some of the areas studied will be: Renal Pathology and Congenital Disorders; Renal Physiology; Renal Function Testing; Glomerular Disease I and II; Urinary Tract Pathophysiology/Urinary Tract Infection; Urinalysis; Acid-Base; Pathology of the Prostate; Testicular/Penile Neoplasm; Salt and Water; Diuretics; Acute Renal Failure; Potassium; Calcium/Phosphorous; Chronic Renal Failure; and Inflammatory Disease of the Male Genital Tract.

**Prerequisite:** successful completion of MS Year I

## Reproductive Medicine - MD (REP)

REP 730: Reproductive Medicine

4 Credits

Some of the areas studied will be: Menstrual Cycle; Sexually Transmitted Diseases; Hormonal Contraception; Non-hormonal Contraception; Amenorrhea and Galactorrhea; Pathology of Cervix, Vulva, and Vagina; Cytology; Ectopic Pregnancy; Normal Pregnancy; Cancer of the Cervix; Pathology of the Breast; Perinatal Pathology; Prenatal Genetics Screen; Pathology of the Ovary and Fallopian Tube; Menopause; High Risk Pregnancy; Trophoblastic Tumors; Carcinoma of the Breast; Pathology of the Uterus; and Ovarian Cancer.

**Prerequisite:** successful completion of MS Year I

## Respiratory Medicine (RESP)

RESP 723: Respiratory Medicine

1-2 Credits

Introduction to normal and abnormal structure and processes of the respiratory system, principles of therapeutics and factors affecting disease treatment and prevention.

**Prerequisite:** must have completed all preceding course work

## Sciences Health Systems (SHS)

SHS 711: Science of Health Systems

1-6 Credits

Students will learn the foundations of health systems through in class instruction and patient navigation clinical site experiences.

SHS 721: Science of Health Systems

1-4 Credits

Students will learn the foundations of health systems through in class instruction and patient navigation clinical site experiences.

**Prerequisite:** SHS 711

SHS 742: Health Systems and COVID-19 Pandemic Response II Elective

1-4 Credits/Maximum of 4

This variable-credit elective (range 1-4 credits based upon time) provides the foundation for learning Health Systems Science (HSS) and other related Clinical/Basic Sciences and Health Humanities in the context of the 2020-2021 COVID-19 pandemic, specifically beginning December 2020. This course will provide the opportunity for experiential learning opportunities by engaging medical and physician assistant students in various tasks to help address the health system and region's response to the emergence and spread of COVID-19. Students will be able to apply what they have learned about HSS concepts, in addition to other clinical and humanities courses, in their years of medical school training to real-world examples, as well as experience a deeper understanding of these principles as they observe and analyze the system's response to the pandemic. Each student will choose an experience from several identified projects or task forces that will be pre-approved by Penn State Health, Penn State College of Medicine, and the Penn State Health Legal Department. The development and oversight of the experiences will be co-facilitated by the course co-directors, in collaboration with medical students who volunteer to be contributors in a co-design task force. All of the experiences will be value-added to the health system, extending the work of the care and support teams. All experiences will follow the current policies as adopted by PSCOM and the Dean in regards to being performed remotely or in person. Students will not have face-to-face interactions with patients with COVID-19 or persons under investigation for COVID-19. All of the experiences will have faculty oversight and guidance. Students may engage in multiple projects as there is an anticipated dynamic nature to the roles students will contribute during the pandemic. To obtain credit, students will be required to actively participate in the experience, log their activities, and complete designated assignments applicable to each experience as outlined by the course directors. These assignments may include required readings, teaching



other medical students, and development of an end-of-course written project.

**Prerequisites:** Students must be in good academic standing

SHS 744: Health Systems Science Academy Elective

5 Credits/Maximum of 5

The Health Systems Science elective is a longitudinal elective course designed to provide students an advanced learning and authentic experience in health systems sciences within a healthcare delivery system (Penn State Health). Students will be exposed to aspects of population health, value-based care, healthcare systems improvement, healthcare policy and economics, and health care delivery structures and processes. Part of the elective will be spent collaborating with a Health Systems Science Academy scholar to participate in the development of an educational or clinical project that will address an authentic challenge to Penn State Hershey Health System. Sessions will be held two Fridays per month for a total of nine months beginning in September and ending in May. Course material will be presented in the form of mentored relationships with those health systems science faculty and scholars, classroom teaching from various health systems educators, and health systems administrators.

**Prerequisite:** Successful completion of Phase I and Phase II and Translating Health Systems Science in Phase III

SHS 797: Health Systems and COVID-19 Response Special Topics Elective

1-4 Credits/Maximum of 4

This variable-credit elective (range 1-4 credits based upon time) provides the foundation for learning core Health Systems Science (HSS) and other related Clinical/Basic Sciences and Health Humanities in the context of the 2019-2020 COVID-19 Global Pandemic. This course will provide the opportunity for experiential learning opportunities by engaging students in various tasks to help address the health system and region's response to the emergence and spread of COVID-19. Students will be able to apply what they have learned about HSS concepts in their years of medical school training to real-world examples, as well as experience a deeper understanding of these principles as they observe and analyze the system's response to the pandemic. Each student will choose a primary experience from the emerging list of projects that have been pre-approved by Penn State Health, Penn State College of Medicine, and the Penn State Health Legal Department. All of the experiences will be value-added to the health system, extending the work of the care and support teams; all experiences will be performed remotely and away from direct patient contact and any of the campuses of Penn State College of Medicine or Penn State Health. All of the experiences will have faculty oversight and guidance as would be expected of any other course or clinical clerkships. Students may engage in multiple projects as there is an anticipated dynamic nature to the roles students will contribute during the pandemic. To obtain credit, students will be required to actively participate in the experience, log their activities, and complete designated assignments applicable to each experience as outlined by the course directors. These assignments may include required readings, teaching other medical students, and development of an end-of-course written project.

**Prerequisites:** Successful completion of Phase I and Phase II & students must be in good academic standing with no identified deficiencies in their clerkships.

## Scientific Principles of Medicine (SPM)

SPM 711: Scientific Principles of Medicine

15 Credits

This course provides an introduction to the basic science principles that form a foundation for the study of clinical medicine.

**Prerequisite:** completion of all preceding Phase 1 courses

## Social Influences on Health (SIH)

SIH 711: Social Influences on Health

3 Credits

This course introduces population based medicine and its influence on individuals and provides a framework for learning subsequent biomedical sciences.

**Prerequisite:** entrance into medical school

## Socio-Ecological Medicine (SOEM)

SOEM 711: Socio-Ecological Medicine

3 Credits

An introductory course encompassing topics such as public health, socio-ecological medicine, global health, health systems, medical anthropology, and culturally-sensitive medicine.

**Prerequisite:** entrance to medical school

## Structural Basis of Medical Practice (SBMP)

SBMP 715: Structural Basis of Medical Practice

13 Credits

This integrated course will provide gross structure, organization, and function of human body with labs devoted to dissection of human body; clinical and radiological correlation.

## Students as Educators (SAE)

SAE 744: Students as Educators Elective

2.5 Credits/Maximum of 2.5

This 2.5 credit elective serves as a foundation for learning the principles of practical clinical, classroom, and small group teaching techniques. This course will provide training in educational methods and an introduction to theory to help medical students become effective educators. Students will apply what they have learned about research-based teaching practices as they work with first, second, and/or third year medical students. Each student will choose at least one type of teaching opportunity from a list provided. Students will be required to actively participate in teaching workshop sessions, complete required readings, teach medical students, be formally observed while teaching by a faculty

member, and use information from a variety of sources to reflect on their learning and teaching.

**Prerequisite:** Completion of Phase II, no deficiencies in clerkships, letter of recommendation.

## Surgery - MD (SURG)

SURG 700: Surgical Core Clerkship

15 Credits/Maximum of 15

Fundamental surgical course for medical students designed to provide basic surgical information and clinical exposure.

**Prerequisite:** completion of first two years of medical school

SURG 710: General Surgery Acting Internship

5 Credits/Maximum of 5

Four week General Surgery Acting Internship.

**Prerequisite:** successful completion of all third year clerkships and pre-conference with course director

SURG 711: Cardiothoracic Surgery Acting Internship

5 Credits

Acting Internship in Adult Cardiothoracic Surgery.

**Prerequisite:** completion of all third-year core clerkships; pre-conference with course director

SURG 712: Surgical Endocrinology Elective

5 Credits/Maximum of 5

An in-depth experience involving the medical and surgical management of endocrinological disorders.

**Prerequisite:** completion of all third-year core clerkships

SURG 713: Vascular Surgery Acting Internship

5 Credits/Maximum of 5

An opportunity for in-depth experience in vascular surgery.

**Prerequisite:** completion of all third-year core clerkships

SURG 714: Transplant Surgery Acting Internship

5 Credits/Maximum of 5

An in-depth experience in the preoperative evaluation, intra-operative procedures, and postoperative management of kidney, liver, and pancreas transplant patients.

**Prerequisite:** third year core clerkships

SURG 720: Plastic Surgery Acting Internship

5 Credits/Maximum of 5

Preceptorship with an active plastic surgical service at The Milton S. Hershey Medical Center or an affiliated hospital.

**Prerequisite:** completion of the third-year core clerkships

SURG 722: Hand Surgery Acting Internship

5 Credits/Maximum of 5

Surgical Acting Internship experience in Hand Surgery.

**Prerequisite:** completion of all third-year core clerkships

SURG 733: Plastic Surgery Elective for 3rd Year Students

5 Credits

Plastic Surgery is a broad surgical specialty in which cosmetic surgery has a relatively small part. This independent one-month rotation has been designed to allow interested 3rd-year medical students at Penn State an in depth exposure to the unique elements of academic plastic surgery. In addition to mastering specialized surgical techniques and applications, plastic surgeons also frequently collaborate with many other types of surgical specialists for specific problems. The duration of this rotation will improve the frequency of such interactions in addition to strengthening the students' overall experience. During their rotation, students will be expected to pre-round on patients whom they have been following, write notes, round with the Plastic Surgery team every morning, and present and help manage their patients. They will then report to the assigned clinic or OR. They will attend the division didactic sessions. Students will typically be expected to participate in weekend duties on two separate weekends including pre-rounding, rounding with the team, and presenting assigned patients to the on-call attending. Students may elect to participate in any emergencies that present over the weekends, as well. Students should expect to gain exposure in many if not all of the major areas of Plastic Surgery including, but not limited to, oncologic breast reconstruction, general reconstructive surgery (e.g., traumatic and/or oncologic wound coverage, Mohs closures), pediatric craniofacial surgery (e.g., cleft lips and cranial vault remodeling), skin oncology (e.g., cancer resection and reconstruction), hand/wrist surgery (e.g., peripheral nerve decompression and fracture fixation), microsurgery, burn care, cosmetic surgery, treatment of facial fractures, and pressure sore care. To facilitate this experience, students will generally be assigned to 1-week sub-rotations in the following categories: Pediatric Craniofacial Surgery, Hand/Upper Extremity Surgery, Reconstructive (General, Breast, and Trauma) Surgery, and Skin Oncology/Mohs reconstruction. Students can gain additional responsibilities as determined by their level of comprehension and should anticipate assisting in operations, as is feasible and appropriate.

**Prerequisite:** Successful completion of the first two years of medical school. Students will not be permitted to participate in both a 2-week Plastic Surgery rotation during their Surgery Clerkship and a 1-month third-year elective in Plas

SURG 740: Urology Acting Internship

5 Credits/Maximum of 5

In-depth experience in evaluation and management of urologic problems.

**Prerequisite:** completion of all third-year core clerkships

## SURG 741: Intensive Respiratory Care -- Anesthesia

5 Credits/Maximum of 5

Students are taught to assess and manage acute respiratory insufficiency.

**Prerequisite:** successful completion of all 3rd year clinical clerkships

## SURG 745: Pediatric Cardiothoracic Surgery Elective

5 Credits/Maximum of 5

This fourth-year elective provides an introduction to the operative repair and peri-operative management of simple and complex congenital heart disease. PED (SURG) 745 Pediatric Cardiothoracic Surgery Elective (5) This elective in pediatric cardiothoracic surgery is offered to fourth-year medical students with an interest in congenital heart disease. It is principally targeted at students who plan a career in pediatrics, surgery, or pediatric or adult cardiology. The course is offered year-round on a monthly basis, with enrollment limited to 1-2 students per rotation. Students will work exclusively with attending surgeons in the clinical environment, and will participate in the comprehensive surgical management of infants, children, and adults with congenital heart disease. Clinical exposure will be provided to the initial surgical consultation, the judgment and rationale for operative versus non-operative management, the preoperative family counseling meeting and informed consent process, and the formulation of the operative plan. In the operating room, students will second-assist with pediatric heart surgery and will gain first-hand appreciation of the anatomic defects and their surgical repair. Postoperatively, students will participate in clinical rounds on pediatric heart surgery patients, and will follow the patients to discharge. The elective will emphasize the multi-disciplinary approach to the management of congenital heart disease, with collaborative exposure to pediatric cardiology, pediatric critical care, cardiac anesthesia, and cardiology for adults with congenital heart disease. Didactic lectures, case presentations, and reviews will be provided to students as an introduction to the major heart defects. Students will gain skill in the interpretation of echocardiograms, and will have the opportunity to view, in real-time, intraoperative transesophageal echo images, and correlate those images to the live, beating heart. Students will also gain skill in interpretation of cardiac MRI and CT angiography. The course is offered as an elective for students seeking an advanced introduction to surgery for congenital heart defects. The course is not intended as an acting-internship; thus, there is no in-house call, and limited night or weekend clinical requirements. A pre-test and a post-test will be administered.

**Prerequisite:** third-year core clerkships

Cross-listed with: PED 745

## SURG 780: Pediatric Surgery Acting Internship

5 Credits/Maximum of 5

Exposure to the surgical crises of the pediatric patient and their treatment.

**Prerequisite:** completion of all third-year requirements

## SURG 790: Senior Medical Student Surgery Capstone Course

2.5 Credits

This course is designed for graduating medical students that have applied to or matched a surgical residency (general surgery, orthopedics, neurosurgery, urology, plastic surgery, and ENT) to provide them with

an advanced cognitive knowledge base and experience with procedural skills frequently required of surgical interns. Additionally, this course will allow students to gain invaluable experience with interdisciplinary professionalism and case-based problem solving. Curriculum includes didactic lectures, case-based and small group learning sessions, simulation based procedural instruction and practice, as well as standardized patient encounters. Upon completion of the course students will have better knowledge of surgical patient care, be able to proficiently perform surgical skills frequently required of surgical residents, and have improved confidence in their preparation for surgical residency. A pre- and post-survey will focus on participants' confidence in specific procedural skills and common on-call surgical problems. Pre- and post-exams will also be given to measure student's knowledge on peri-operative patient care and complications. Grading will be Pass-Fail. Additionally, students that complete the skills sessions and pass skill proficiency exams may receive a letter addressed to their residency program director from the course directors to attest to their proficiency of the skills taught in this course.

**Prerequisite:** Open to students in Phase III/IV; successful completion of all phase I, II and III coursework. Students should have applied to/ matched into a surgical internship.

## SURG 796: Surgery Individual Studies

5 Credits/Maximum of 5

Creative projects including nonthesis research, supervised on an individual basis and which fall outside the scope of formal courses.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for course.

## SURG 796A: Surgery Individual Studies for 3rd Year Medical Students

2.5 Credits

Surgery Individual Studies for 3rd Year Medical Students.

**Prerequisite:** successful completion of one 3rd year core clerkship

## SURG 797: Surgery Special Topics

5 Credits/Maximum of 5

Formal courses given on a topical or special interest subject which may be offered infrequently.

**Prerequisite:** successful completion of 3rd year core clerkships. Student must contact course director for approval prior to registering for this course.

## Transition (TRANS)

## TRANS 711: Transition to Medical School

1-2 Credits

A prologue to the student's medical school experience and an introduction to the medical profession.

## TRANS 733: Transition to Clerkships

2 Credits

This course is designed to provide medical students with a transitional overview for using the clinical and educational systems that are essential

tools during Phases II-IV of the medical school curriculum. TRANS 733 will also ensure that students complete mandatory hospital training sessions that ensure their compliance for the MS Hershey Medical Center and with our affiliate sites. Using large and small group discussions, standardized patient encounters, and individual module completion, students will meet all of the course objectives outlined below. At completion, students will have attained the foundational skill set and knowledge base that will ensure a successful transition to their clinical training, to be built upon during mandatory clerkships and clinical electives.

TRANS 743: Transition to Internship

1-2 Credits/Maximum of 2

Provide review of clinical skills prior to internship training, and introduce new skills in team building, education and time management.

## Transition Clinical Medicine (TCM)

TCM 706: Transition to Clinical Medicine

2 Credits

Introductory course that teaches the basic skills and knowledge a student needs to enter the clinical training years.

**Prerequisite:** medical school enrollment/successful completion of Year I and II courses

## Translating Health Systems Science (THS)

THS 743: Translating Health Systems Science to the Clinical Setting

2.5 Credits/Maximum of 2.5

This course is designed to help apply concepts of patient safety, quality improvement, value, and teams to the clinical setting and build upon previous learned Public Health principles. The goal is to guide learning in these concepts so that the student will have base knowledge to help improve care of patients and the health system in which they will work during the fourth year of medical school, residencies, and beyond. The content of this course endeavors to help students become "systems thinkers". By design, this course emphasizes teamwork, an essential component in providing quality care. Opportunities will be provided in this course to actively identify patient safety issues and develop a quality improvement project proposal. Additional resources will be provided so that students may continue their learning on health systems after the course is co

**Prerequisite:** Successful completion of Phase I curriculum

## Underserved Medicine and Domestic Health (UMDH)

UMDH 700: Underserved Medicine and Domestic Health

5 Credits/Maximum of 5

Students will apply critical thinking and clinical reasoning to improve patient outcomes within the framework of underserved medicine.

**Prerequisite:** medical students must have completed all requirements to enter Phase II of their training to complete this clerkship

# INDEX

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## A

About Penn State .....	6
About the College of Medicine .....	3
Anatomy - MD (ANAT) .....	35
Anesthesiology - MD (ANSTH) .....	35
Archive .....	2

## B

Behavioral Influences Health (BIH) .....	36
Biological Basis of Disease (BBD) .....	36

## C

Cardiology - MD (CAR) .....	36
Career Exploration and Synthesis (CES) .....	36
Cellular and Molecular Basis of Medical Practice (CMBMP) .....	37
Clinical Learning Competencies (CLC) .....	37
College of Medicine Bulletin .....	2
College of Medicine Courses .....	34
Complementary Alternative Medicine (CAM) .....	38
Culinary Medicine (CULMD) .....	38

## D

Dermatology - MD (DERM) .....	38
-------------------------------	----

## E

Emergency Medicine - MD (EMED) .....	38
Endocrinology - MD (END) .....	39
Endocrinology and Reproductive Medicine (ENREP) .....	39
Evidence-Based Medicine I (EBM) .....	39

## F

Family and Community Medicine - MD (FCMED) .....	39
Form and Function (FORM) .....	41
Foundations of Clinical Medicine (FCM) .....	41
Foundations of Patient Centered Care (FPCC) .....	42

## G

Gastroenterology - MD (GI) .....	42
General Information .....	2
Global Health (GH) .....	43
Graduation Information .....	5

## H

Hematology - MD (HEM) .....	43
Humanities - MD (HMN) .....	43

## I

Integrated Science (INTSC) .....	47
----------------------------------	----

## M

MD Program .....	9
Medical Clerkship Island - MD (MCLKS) .....	48
Medical Ethics Professionalism (MEP) .....	48
Medical Home Curriculum (MHC) .....	48
Medical Triage and Resuscitation (MEDTR) .....	48
Medicine - MD (MED) .....	48
Musculoskeletal Medicine - MD (MSC) .....	51
Musculoskeletal System (MSK) .....	51

## N

Neural and Behavioral Science (NBS) .....	51
Neuroscience - MD (NEURO) .....	51
Neurosurgery (NSURG) .....	52

## O

Obstetrics and Gynecology - MD (OBGYN) .....	52
Ophthalmology (OPHTH) .....	53
Orthopaedics (ORTHO) .....	54

## P

Pathology - MD (PATH) .....	54
Patients and Sciences (PS) .....	55
Pediatrics - MD (PED) .....	56
Physical Medicine and Rehabilitation (PMR) .....	58
Physician Assistant Program .....	24
Physician Assistant Studies (PAS) .....	58
Primary Care Medicine (PCMED) .....	75
Problem-Based Learning Facilitation - MD (PBL) .....	76
Psychiatry - MD (PSCHT) .....	77
Pulmonary Medicine - MD (PLM) .....	77

## R

Radiology (RAD) .....	78
Renal Medicine - MD (REN) .....	79
Reproductive Medicine - MD (REP) .....	79
Residencies and Fellowships .....	5
Resources .....	4
Respiratory Medicine (RESP) .....	79

## S

Sciences Health Systems (SHS) .....	79
Scientific Principles of Medicine (SPM) .....	80
Social Influences on Health (SIH) .....	80

Socio-Ecological Medicine (SOEM) .....	80
Structural Basis of Medical Practice (SBMP) .....	80
Student Handbooks .....	5
Students as Educators (SAE) .....	80
Surgery - MD (SURG) .....	81

## **T**

Transition Clinical Medicine (TCM) .....	83
Transition (TRANS) .....	82
Translating Health Systems Science (THS) .....	83

## **U**

Underserved Medicine and Domestic Health (UMDH) .....	83
University Course Descriptions .....	30
Using this Bulletin .....	2