Traditionally, Pathology is divided into general and systemic pathology. The course is structured to provide basic information about the evolutionary relationship, structure, physiology and molecular biology of the prokaryotic cells and viruses, and the basic mechanisms of immunology in relation to oral health. Emphasis will also be placed on how oral microorganisms participate in plaque/biofilm formation, caries and periodontal disease. Primary objectives related to the clinical setting include an understanding of the basis of selective inhibition of antibiotics and the development of resistance, understanding the basis of seriological tests and immunization and interpretation of radiographic evidence for caries and periodontal disease.

DENT 502 Foundation Sciences II
The course is structured to provide basic information about the evolutionary relationship, structure, physiology and molecular biology of the prokaryotic cells and viruses, and the basic mechanisms of immunology in relation to oral health. Emphasis will also be placed on how oral microorganisms participate in plaque/biofilm formation, caries and periodontal disease. Primary objectives related to the clinical setting include an understanding of the basis of selective inhibition of antibiotics and the development of resistance, understanding the basis of seriological tests and immunization and interpretation of radiographic evidence for caries and periodontal disease.

DENT 503 Foundation Sciences III
Foundation Sciences III is the first course in the curriculum that focuses on the underlying cellular and molecular basis of disease and is a critical component of a larger subject commonly known as Pathology. In its simplest terms, Pathology is the study of the structural, biochemical and functional abnormalities that develop within cells, tissues and organs resulting in disease. The disease process forms the core of pathology and includes: etiology, pathogenesis, lesions and clinical manifestations. Traditionally, Pathology is divided into general and systemic pathology. FSIII is the first of two courses (the other being FSIV) that collectively comprise the topic of general pathology. Specifically, FSIII will focus on: (1) the reactions of cells and tissues to abnormal stimuli leading to either adaption or cell injury and (2) pathogenic mechanisms responsible for disease development.

DENT 506 Foundation Sciences IV
This series of lectures will present relevant and important diseases and their treatments. We will explore the mechanisms used by bacteria to infect cells and present two major classes of bacteria, the Streptococcus and Staphylococcus. We will introduce odontogenic infections important to the oral cavity. Gastrointestinal infections, sexually transmitted diseases, tuberculosis and bacterial endocarditis will also be presented. There will be an introduction to antibiotics. This will be followed by a set of lectures on viruses with oral manifestations. These will include herpes, hepatitis, influenza, rhino, coxsackie, measles, mumps, rubella viruses and treatments using antiviral drugs. Highlighted will be HIV and opportunistic infections of AIDS. Next, fungal infections and treatments will be presented. Finally, infection control in dentistry will be featured.

DENT 510 Biological Systems I
Biological Systems I is multi-disciplinary, module-based course. Module I will provide the student with a basic understanding of the molecular, tissue patterning and functional mechanisms that give rise to the human form. Clinical aberrations, including craniofacial dysmorphisms will be presented to illustrate what happens when normal developmental mechanisms are disrupted. Module 2 will provide the student with a thorough understanding of the development, biology, morphology and function of mucosal epithelium, connective tissue, skin and salivary glands. Module 3 combines perspectives from neurocytology, neurophysiology and pharmacology to help students develop a preclinical understanding of neuronal conduction and coordination as applied to the function and pharmacology of the somatic and autonomic nervous systems. Clinical correlations will be used where appropriate.

DENT 512 Biological Systems II
Presented in lectures and seminars, Module 1, will present information on the history of Radiology, in particular Dental Radiology and its implications for diagnosis and patient care. Module 2 will present a detailed survey of osteology of the skull, cervical spine and laryngeal skeleton in a series of interactive lectures and small-group conferences. Appreciation of the three-dimensional anatomy of the cranium, temporomandibular joint and the orofacial skeletal complex will be reinforced with integrative presentations of radiographic anatomy to introduce some clinical correlations. Module 3 will present a basic knowledge of bone based on developmental, anatomical, histological, radiological, molecular and functional perspectives. Teach the fundamental principles of cell-cell interactions, extracellular matrix deposition and mineralization related to bone homeostasis, remodeling and healing. Concepts will be emphasized with radiological presentation of bone diseases using different imaging modalities.
DENT 514 Biological Systems III
Biological Systems III combines the study of the general principles of anatomy, physiology of the human vascular, muscular and neuroanatomic systems with an emphasis on the orofacial complex. The goals of the course are to provide students with a sound knowledge of normal biology and organization of those organ systems and to examine and discuss examples of pathophysiological conditions. Students should subsequently be able to recognize the anatomical structures, identify tissue types, and explain the principal physiological functions of the vasculature, muscle and cranial nerves. The third module also includes clinical assessment of cranial nerve function.
Activity: Lecture
4.0 Credit Hours

DENT 516 Biological Systems IV
Cadaveric Anatomy of the Head and Neck is designed to facilitate integration of the gross anatomy learned systemically in the Biological Science track through the meticulous regional dissection of a human cadaver. In addition to enabling visualization of both anatomical structures and their clinically significant relationships in a three-dimensional context, the course provides initiation into the tactile manipulation of the human body.
Activity: Lecture
3.0 Credit Hours

DENT 518 Biological Systems V
The course will provide the student with a sound knowledge of hematology and the basic biology and organization of the cardiovascular, pulmonary and renal systems; and establish the general integrative knowledge of the pathologies most commonly associated with these systems. The student will be made aware of the relevance of those pathologies, and the therapeutic agents applied, to dental practice. On the basis of the information and concepts learned during the course, the student will subsequently be able to: 1) Understand laboratory medicine, hematologic disorders, and transplant medicine; 2) To recognize the anatomical structures, identify tissue types, and explain the principal physiological functions of the three internal systems; 3) To recognize and explain the interrelationships within and between the anatomical structures of the heart, blood vessels, lung, and kidney; 4) To familiarize with the common pathologies likely to be encountered during dental practice and their implications to oral health; 5) To understand how specific systemic diseases affect diagnosis, management and general well-being of the dental patient.
Activity: Seminar
3.0 Credit Hours

DENT 530 Advanced Simulation
The objective of the Freshman Advanced Simulation Laboratory course is to introduce and develop specific psychomotor and cognitive skills through the use of virtual reality based training that will enhance and augment future skills acquired in the preclinical General Restorative Dentistry, Operative Dentistry course. Technical skills are developed through learning preparations with a high speed handpiece, and dental hand instruments in a virtual reality, advanced simulation environment. Suitable operative skills, knowledge, and ergonomics will be emphasized for the successful transition into the preclinical operative course. Dental terminology and principles of tooth preparation will be applied to the theory of all the basic preparations. Suitable operative skills, knowledge, and ergonomics will be emphasized for the successful transition into the preclinical operative course.
Activity: Laboratory
0.5 Credit Hours

DENT 532 Dental Devel.& Anatomy
The Freshman Dental Development and Anatomy provides foundational knowledge regarding Tooth development, Primary dentition, Permanent dentition, Tooth numbering systems, Tooth classification (Incisors, Canines, Premolars, Molars), Set Traits (traits between Primary and Permanent dentition), Class traits (traits for each kind of tooth), Arch traits (traits of maxillary vs. mandibular), and Type traits (differences between teeth within the Class). Dental morphology relative to Operative dentistry procedures will be discussed. This knowledge will be called upon throughout all four years of the dental curriculum.
Activity: Lecture
2.5 Credit Hours

DENT 534 Intro. To Occlusion
The objective of the Freshmen Dental Occulsion course is to provide foundational knowledge regarding human occlusion and the temporomandibular joint. Dental occlusion relative to Operative dentistry procedures will be discussed. This knowledge will be called upon throughout all four years of the dental curriculum. This course includes lectures and laboratory sessions where waxing of teeth using only concepts related to dental occlusion, selective grinding to achieve an ideal occlusal relationship, alginate impressions and diagnostic model making, facebow transfer, and diagnostic model mounting procedures will be completed to reinforce didactic materials presented.
Activity: Lecture
2.0 Credit Hours

DENT 536 Operative Dent. Lecture
The objective of the Freshmen Operative Dentistry lecture course is to give foundational knowledge of operative instrumentation, operative dentistry, terminology, principles of cavity preparations, and the basics of single tooth restorations.
Activity: Lecture
1.5 Credit Hour

DENT 538 Operative Dent. Lab
The objective of the Freshmen Operative Dentistry Laboratory course is to develop an understanding of the normal, healthy stomatognathic system and to introduce fundamental didactic and psychomotor skills, relative to operative dentistry procedures. The course includes a review of individual tooth anatomy and the study of occlusion to define what is normal and healthy. The study of cariology and the treatment of the pathologic progress continues afterward. Restoration of form and function with basic intracoronal amalgam and composite procedures then follows. More complex intracoronal procedures such as gold inlay and porcelain onlay preparations and restorations are then taught. Throughout the entire course, the study of occlusion as it applies to restorative dentistry procedures is continued.
Activity: Laboratory
3.25 Credit Hours

DENT 539 Dental Materials
The course is divided into two segments. The first segment teaches the principles of materials science. The second segment is designed to present topics in applied dental materials as students use these materials in General Restorative Dentistry (GRD). After successful completion, the student should understand how the basic principles aid in material selection, risk/benefit assessment, restoration design, patient information and evaluation of new materials and manufacturer’s claims.
Activity: Lecture
1.25 Credit Hour
DENT 540 Periodontics I
This course is presented in two parts. The first part presents basic biology concepts applied to the healthy and diseased periodontium. Macroscopic and microscopic changes of the periodontium will be featured and how these are altered by disease. In addition the biological basis for etiology, pathogenesis and epidemiology of periodontal disease is presented. The second part consists of presenting the basic clinic procedures for diagnosis and non-surgical treatment of periodontal diseases through lectures, preclinical labs and clinical rotations. Part 2: consists of lectures, pre-clinical labs and clinical rotations. Those will be dedicated to presenting diagnostic and non-surgical aspects of periodontal therapy.
Activity: Lecture
1.75 Credit Hour

DENT 550 Behav Sci I-Health Promo
Lectures, seminars, clinical sessions and community field experiences are provided so that students gain the necessary knowledge and skills in oral health promotion and disease prevention activities related to caries, periodontal diseases and oral cancer. Focus is placed on assessment, planning, implementation and evaluation of strategies designed to target the individual patient, the community and a population perspective. Course topics include discussion of the philosophy, modalities, rationale and evaluation of health promotion and disease preventive activities related to caries, periodontal diseases and oral cancer. Focus is placed on assessment, planning, implementation and evaluation of strategies designed to target the individual patient, the community and a population perspective. Course includes an introduction to evidence based care and research principles in application to critique of current dental literature.
Activity: Lecture
2.0 Credit Hour

DENT 552 Ethics I
The objective of the PEDM courses (1st,2nd and 3rd year courses) is to impart a general knowledge of fundamental concepts in principles of professionalism and ethical decision making with emphasis on care-based discussions. The courses utilize lectures, seminars, online discussions, and reflection papers to address issues related to doctor-patient relationships, academic integrity as well as professional communication. These Pass/Fail courses provide a forum for discussing, debating and understanding parameters of professional and ethical behavior, and their impact on the patients, colleagues, the public, and the profession. PEDM I focuses on academic integrity, micro-aggressions and how professional and ethical behavior during pre-clinical years translates into ethical clinical practice.
Activity: Lecture
0.5 Credit Hours

DENT 560 Intro To The Patient
This course will provide foundational knowledge about the doctor-patient relationship, present medical history skills and cover the basics of a dental orofacial physical exam. The first part of the course includes lectures outlining the doctor patient relationship, components and applications of the medical history. The second part includes lectures outlining the components and application of the physical exam, including vital signs, cranial nerve exam, head and neck examination, and examination of the heart and lungs. The third and final part of the course includes two practical workshops in small groups where students are required to practice taking medical histories and performing various components of the physical examination. The second rotation occurs in the Oral Diagnosis clinic where students take a medical history and perform a physical examination on a PDM admissions patient.
Activity: Lecture
5.0 Credit Hours

DENT 562 Clinical Prac II - Dau
This course is designed to teach the first-year student a four-handed dental assisting technique which is used to assist third and fourth year students in clinical practice. In addition, skills such as patient communication, team building, and record keeping are taught. Students gain clinical experience and assist in the same procedures that they are encountering in GRD, thus forming a clinical bridge to pre-clinical learning. Lectures, a written exercise, a lab, clinical rotations and completion of a clinical exam make up the didactic portions of the course.
Activity: Clinic
3.75 Credit Hours

DENT 564 Intro To Clinical Dent I
This course provides first-year dental students with a variety of different clinical experiences. The student spends day-long rotations in various predoctoral and specialty PDM clinics. In addition, students gain a unique perspective in practice management by assisting PDM staff with dispensing clinical supplies and in Instrument Management Services.
Activity: Lecture
0.25 Credit Hours

DENT 580 Orthodontics I
This course will expose the students to the diagnostic and treatment planning process in orthodontics. The student will also be taught the basic principles and events in child growth and development (craniofacial, somatic and dentitional) as well as the development and diagnosis of malocclusions.
Activity: Seminar
2.25 Credit Hours

DENT 600 Intro To Pharmacology
Neuropharmacology is both a basic science and a clinical science. It builds on the foundation of anatomy, biochemistry, physiology, and pathology and bridges the gap into clinical dentistry. This course in basic neuropharmacology will give the students a better understanding of drugs, interpreting complicated drug/medical histories, and understanding drug reactions. This module will focus on pharmacology of the central nervous system with lectures on analgesic agents, anti-anxiety drugs, general anesthetics, arthritis and gout drugs, prescription writing and a host of other agents used to treat diseases of the CNS including Parkinson’s, seizures, and a variety of psychiatric disorders. Clinically relevant drug-drug interactions will also be covered in this course.
Activity: Lecture
0.75 Credit Hours
DENT 606 Neuro,Neuropsych,Beh Mg
Activity: Lecture
2.75 Credit Hours

DENT 610 Biological Systems V
This course combines an introduction to the general principles of anatomy, histology, and physiology of the human cardiovascular, pulmonary and renal systems, with an extensive study of the pathology and therapeutics of these systems, with an explicit emphasis on their relationship to dental practice. This course is presented in three modules. We have assembled a diverse and experienced group of lecturers, including experts in oral medicine, oral surgery, anatomy, physiology, pharmacology and pulmonary and renal medicine.
Activity: Lecture
5.75 Credit Hours

DENT 612 Biological Systems Vi
This course combines an introduction to the general principles of anatomy, histology, and physiology of the human gastrointestinal, hepatobiliary, and endocrine systems, with an extensive study of the pathology and therapeutics of these systems, with an explicit emphasis on their relationship to dental practice.
Activity: Lecture
4.0 Credit Hours

DENT 614 Biological Systems Vii
Cadaveric Anatomy is designed to facilitate integration of the gross anatomy learned systematically in the Biological Systems curriculum stream through the meticulous regional dissection of a human cadaver. In addition to enabling visualization of both anatomical structures and their clinically significant relationships in a three-dimensional context, the course provides initiation into the tactile manipulation of the human body.
Activity: Laboratory
1.25 Credit Hour

DENT 616 Biological Systems Viii
This course combines an introduction to the general principles of anatomy, histology, and physiology of the human hematopoietic and lymphoid system and neurologic systems with an extensive study of the pathology and therapeutics of these systems, and with an explicit emphasis on their relationship to dental practice.
Activity: Lecture
2.0 Credit Hours

DENT 620 Oral & Maxil Complex I
This is a course that will apply what students have already learned in Foundation Sciences and Biologic Systems courses to the study, interpretation and diagnosis of oral disease. It is an essential link between the basic and clinical sciences concerned with the mechanisms of disease (e.g., inflammation, genetic disease, neoplasia, immunopathology) and the disease processes that students will encounter during their careers in dentistry. The emphasis will be on oral soft and hard tissue pathology, including oral manifestations of systemic diseases that may impact on the health of the patients.
Activity: Lecture
3.0 Credit Hours

DENT 622 Oral & Maxil Complex II
This course will develop a general knowledge of fundamental concepts in orofacial function and occlusion. The course is presented in two modules, with an exam at the end of each module. The orofacial function module will focus on physiology anatomy and function of the facial structures, including saliva, mastication, speech, swallow, smell and taste. The goal is for the students to have a basic understanding of orofacial function. The occlusion module will discuss the role of occlusion in restorative dentistry with emphasis on the clinical application of fundamental biomechanical principles, techniques and instruments. By focusing on diagnosis, the student will be able to understand and develop the parameters to create successful restorative decisions and well-sequenced treatment plans. This module will provide a mandatory hands-on session for facebow transfer, underocclusal record and articulator set-up.
Activity: Lecture
1.75 Credit Hour

DENT 624 Oral & Maxil Complex III
This course is designed to give the student exposure to all methods of anesthesia and pain control used in dentistry, as well as, various medical emergencies encountered in practice. In addition, the students will learn about the mechanisms and consequences of orofacial pain. All lectures will be presented by faculty members from the departments of Oral and Maxillofacial Surgery & Pharmacology and Oral Medicine.
Activity: Lecture
3.75 Credit Hours

DENT 628 Oral Diagnosis and Emergency Medical Clerkship
The purpose of this course is to give students a foundation for understanding physical diagnosis, medical work-ups, medical consultations and medical conditions which directly affect the medical management of the dental patient.
Activity: Seminar
3.0 Credit Hours

DENT 630 Fixed Prosthodontics Lec
The curriculum of the Fixed Prosthodontics Lecture Course deals with the building of knowledge, thought processes and understanding the procedures required in the restoration of missing and/or badly broken-down teeth by the fabrication of non-removable prostheses. Students will learn diagnosis, treatment planning, rehabilitation and maintenance of oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth using biocompatible substitutes. These restorations must provide an improved state of oral health, function and esthetics for patients.
Activity: Lecture
3.0 Credit Hours

DENT 631 Fixed Prosthodontics Lab
The curriculum of Fixed Prosthodontics Laboratory deals with the building of knowledge, thought processes, skills and understanding the procedures required in the restoration of missing and/or badly broken-down teeth by the fabrication of non-removable prostheses. Student will gain hands-on experience in the clinical and technical aspects of fixed prosthodontics.
Activity: Laboratory
3.75 Credit Hours
DENT 632 Complete Rem Dent Pros L
The goal of this course is to provide students with the foundation of knowledge needed to diagnose and treat edentulous patients. Students should be able to: 1. Recognize and define complete denture terminology deemed relevant in the classroom, course syllabus, and assigned readings. 2. Describe medical, emotional, and oral anatomic factors that aid in formulation of diagnostic considerations in the complete denture therapy. 3. Describe functional anatomy of the edentulous mouth. 4. Understand the clinical procedures performed during the construction of conventional complete dentures and during the maintenance phase of treatment. 5. List the fundamental clinical procedures performed during the construction of immediate complete dentures. 6. Understand the complete denture occlusion. Upon completion of this course, the students should have an in-depth understanding of: 1. The need for therapy in and restoration of the edentulous arch with complete prostheses. 2. The significance of avoiding the edentulous condition in a patient wherever possible. 3. The dental materials that are used at the different stages of complete dentures therapy. 4. The concept and techniques of the clinical steps involved in the treatment of the edentulous patient. Activity: Lecture 2.25 Credit Hours

DENT 633 Complete Rem Dent Pros B
The goal of this second-year course is to provide the dental students with the technical knowledge and skills needed to perform all the laboratory procedures used in the construction of complete dentures and apply the foundation knowledge learned in the lectures. Students should be knowledgeable and skilled in the following: 1. Describing and performing selected sequential clinical and laboratory procedures required during the construction of complete dentures. 2. Applying the knowledge related to dental materials learned in the lectures. Upon completion of this course, the students should be able to: 1. Perform all the laboratory procedures used in construction of complete dentures. 2. Demonstrate the function and the usage of Hanau face bow and articulator in the construction of complete dentures. 3. Communicate with the laboratory technicians via properly written work authorizations. Activity: Laboratory 2.75 Credit Hours

DENT 634 Partial Rem Dent Pros Lb
A combination of lectures, seminars and laboratory exercises provide the dental student with a fundamental understanding of the partially edentulous condition. Topics covered include classification, diagnosis, treatment planning and treatment of partially edentulous patients with RPDs. This course is designed to provide students with the terminology, concepts and principles necessary for case selection, design, construction of, and patient therapy with conventional RPDs. Upon completion of this course students will have the necessary didactic knowledge to successfully understand and treat removable partial denture cases in conjunction with the clinical faculty during their third and fourth years. Activity: Lecture 1.75 Credit Hour

DENT 640 Periodontics II Lec/Lab
This course will be focused on non-surgical periodontal therapy. The macroscopic and microscopic effects of this modality of treatment will be discussed. Different forms of periodontal diseases and non-surgical therapeutic tools will also be presented as well as information on the prognosis of the periodontal therapy and the relevance of maintenance. Activity: Lecture 2.5 Credit Hours
DENT 670 Endodontics Lecture
The Department of Endodontics trains pre-doctoral students to become competent in basic endodontic procedures. This includes instruction in the foundational core of Endodontics, including pulp biology, primary non-surgical root canal treatment. Clinical Endodontics: The Department of Endodontics furthermore trains pre-doctoral students to understand advanced endodontic procedures. This includes instruction in trauma, resorption, retreatment, endodontic surgery, bleaching, etc. Our ultimate goal is to implement that treatment/education in a caring, respectful, and responsible manner.
Activity: Lecture
3.75 Credit Hours

DENT 672 Endodontics Lab
The pre-clinical endodontic laboratory course is designed to introduce endodontic concepts and techniques to a student under simulated conditions using extracted teeth.
Activity: Laboratory
1.5 Credit Hour

DENT 680 Orthodontics
The purpose of this course is to provide students with the knowledge of growth and development, concentrating on child somatic, craniofacial, and dental growth and development. The students build a solid foundation along the lines of diagnosing problems and understanding the etiology of malocclusion and space maintenance.
Activity: Lecture
2.25 Credit Hours

DENT 682 Adjunctive Ortho Lec/Lab
This course is designed to expose the student to basic orthodontic laboratory and clinical procedures and encourages the development of technical abilities in banding, bonding, wire bending, and removable appliance fabrication.
Activity: Lecture
1.25 Credit Hour

DENT 685 Pediatric Dentistry I
Pediatric Dentistry. This course will cover Fundamentals of Pediatric Dentistry that will allow you to have a working knowledge of how to manage infants, children, adolescents and patients with special needs that come into your office as a general dentist. The course also describes topics in pediatric relevant to a variety of dental specialties for those interested in pursuing post-graduate studies.
Activity: Seminar
3.0 Credit Hours

DENT 690 Oral Surgery I
This course is designed to give the student exposure to all aspects of the wide and varied scope of oral and maxillofacial surgery. The course also promotes the integration of the basic sciences and medicine into the daily practice of oral and maxillofacial surgery and dentistry. It builds upon and incorporates knowledge from many prerequisite courses, particularly the Pharmacology, Microbiology, and Anesthesia, Pain, and Anxiety courses. After successful completion of this course and its clinical counterpart (course #872), the student should be competent in the management of all aspects of oral and maxillofacial surgery as outlined above under the course goals. Lectures will be presented by faculty members of the department of Oral and Maxillofacial surgery. The lecture material and reading assignments are designed to be complementary. Examinations will encompass material from both sources. Additionally at the request of the dean of academic affairs, the examinations will include questions that reinforce the knowledge obtained by completion of the prerequisite courses of PHARMACOLOGY, MICROBIOLOGY, and Anesthesia, Pain, and Anxiety. Students should review the material from those courses as both the midterm and final examinations will contain questions from knowledge obtained by their completion.
Activity: Seminar
3.0 Credit Hours

DENT 699 Selectives II
Activity: Lecture
1.0 Credit Hour

DENT 752 Ethics III
PEDM III focuses on responsibility transitioning into the post-graduation world of dentistry and covers a variety of topics such as licensure, residency applications, completing graduation requirements, as well as mentorship and real-world clinical practice dilemmas.
Activity: Seminar
0.25 Credit Hours

DENT 790 Multidisciplinary Seminar
The main objective of this year-long seminar-based course is to ensure that students develop the ability to understand biomedical, behavioral and dental sciences and apply such information in a problem-solving context for the comprehensive treatment planning and management of their patients.
Activity: Seminar
1.25 Credit Hour

DENT 799 Selectives III
Activity: Lecture
2.0 Credit Hours

DENT 800 Art Reg Dental School
Activity: Lecture
54.0 Credit Hours

DENT 899 Selectives IV
The Penn Dental Medicine's Selectives Program enhances the predoctoral curriculum by allowing students to individualize their education to reflect their own professional interests. Students must complete this requirement in order to graduate.
Activity: Lecture
1.0 Credit Hour

DENT 996 Intro To Statistics
Activity: Lecture
1.0 Credit Hour
DENT 997 Systematic Reviews
Activity: Lecture
1.0 Credit Hour