DOCTOR OF DENTAL SURGERY (D.D.S.)

The Doctor of Dental Surgery is the dental degree that is required for the practice of general dentistry. It also is required for any advanced dental education programs. Our program at the School of Dentistry combines multidisciplinary training with a strong clinical focus, which prepares our students for a range of dental careers. The curriculum in the first two years of the Doctor of Dental Surgery program is an integrated basic and clinical sciences program. This program provides a foundation of science in context. Clinical experiences begin in the first year and increase each year until it predominates in the junior and senior years.

Doctor of Dental Surgery (D.D.S.) Program Admissions Requirements

Information about admission requirements is detailed on the School of Dentistry website. Applicants must have at least 90 semester-hour credits from a U.S. or Canadian accredited college or university. Applicants are required to complete courses by the end of the spring semester before entering School of Dentistry, and with a grade no lower than C.

BIOLICAL SCIENCES

- 14 semester hours (12 semester hours of lecture & 2 semester hours of formal lab) or 21 quarter hours (18 quarter lecture hours & 3 quarter lab hours) of Biological Science are required.
- Includes all Biological Science courses applied toward Baccalaureate degree in traditional science fields, such as General Biology, Biochemistry, Microbiology, Molecular Biology, Genetics, Ecology, Immunology, Parasitology and Anatomy & Physiology.

GENERAL CHEMISTRY

- 8 semester hours or 12 quarter hours of General Chemistry, as required for college science majors, including the corresponding laboratory experience are required. (8 semester hours = 6 hours of lecture & 2 hours of lab; 12 quarter hours = 9 hours of lecture & 3 hours of lab).
- Should include familiarity with analytic and volumetric techniques. Inorganic courses include General Chemistry, Physical Chemistry and Quantitative Analysis.

ORGANIC CHEMISTRY

- 8 semester hours or 12 quarter hours of Organic Chemistry, as required for college science majors, including the corresponding laboratory experience are required. (8 semester hours = 6 hours of lecture & 2 hours of lab; 12 quarter hours = 9 hours of lecture & 3 hours of lab).

BIOCHEMISTRY

- 3 semester hours or 5 quarter hours of Biochemistry is required. This requirement is in addition to the Biological Science requirement of 14 hours and may not be used to fulfill the Biological Science requirement. The course may be taught in the Biology, Biochemistry or Chemistry department. Must have a grade of C or better.

PHYSICS

- 8 semester hours or 12 quarter hours of Physics, as required for college science majors, including the corresponding laboratory experience are required. (8 semester hours = 6 hours of lecture & 2 hours of lab; 12 quarter hours = 9 hours of lecture & 3 hours of lab).
- Includes all physics courses applied toward a baccalaureate degree in any traditional science field.

ENGLISH

- 6 semester hours or 9 quarter hours of college English are required.
- Any course accredited by the English Department that fulfills a general education English requirement of a baccalaureate degree will be accepted. Remedial or developmental courses or “English As a Second Language” courses are not accepted.

STATISTICS

- 3 semester hours or 5 quarter hours of Statistics is required. The Statistics course should be taught in a Math or Statistics Department. Individual dental schools may consider statistics courses taught in other departments on an individual basis with appropriate documentation from faculty.

In addition to scholastic requirements for admission, all candidates are required to take the Dental Admission Test (DAT) and, must perform certain essential functions, as described at http://dental.uthscsa.edu/admissions/DDS_requirements.php. All applicants who are legal residents of Texas must apply through the Texas Medical and Dental Schools Application Service. Applications are available online at http://www.utsystem.edu/tmdsas. Applications are also accepted from the American Association of Dental Schools Application Service (AADSAS) for non-Texas residents. AADSAS applications can be found online (https://portal.aadsasweb.org).

Deposit Fee for Admitted Applicants

The School of Dentistry assesses a deposit fee of $60 for admitted applicants wishing to secure their spot in the entering class. The deposit is non-refundable.

Applicant and Student Criminal Background Check Policy

Criminal Background Checks for Applicants and Students of the School of Dentistry of the Health Science Center.

I. Applicability

This policy applies to applicants or students enrolled in an educational program that includes, or may include at a future date, assignment to a clinical health care facility. Visiting students who enroll in courses with such an assignment are also subject to the policy. Presently, programs that require a background check include:

1. Doctor of Dental Surgery Students
2. International Dentist Education Program (IDEP) Students
3. Dental Hygiene Students
4. Advanced Dental Education Students

II. Policy

Effective immediately, applicants must submit to and satisfactorily complete a criminal background check review as a condition to admission into all programs designated as requiring a criminal background check. An offer of admission will not be final until the completion of the criminal background check(s) with results is deemed
favorable. Admission may be denied or rescinded based on a review of the criminal background check.

Students who refuse to submit to a criminal background check or do not pass the criminal background check review may be dismissed from the program.

III. Rationale

Health care providers are entrusted with the health, safety and welfare of patients, have access to controlled substances and confidential information, and operate in settings that require the exercise of good judgment and ethical behavior. Thus, an assessment of a student or applicant’s suitability to function in such a setting is imperative to promote the highest level of integrity in health care services.

Clinical facilities are increasingly required by accreditation agencies, such as Joint Commission on Accreditation of Healthcare Organization (JCAHO), to conduct criminal background checks for security purposes on individuals who provide services within the facility and especially those who supervise care and render treatment. To facilitate this requirement, educational institutions have agreed to conduct these criminal background checks for students and faculty.

Clinical rotations are an essential element in certain curriculum programs. Students who cannot participate in clinical rotations due to criminal or other adverse activities that are revealed in a criminal background check are unable to fulfill the requirements of the program. Additionally, many healthcare licensing agencies require individuals to pass a criminal background check as a condition of licensure or employment. Therefore, it is in everyone’s interest to resolve these issues prior to a commitment of resources by the School of Dentistry.

The School of Dentistry is obligated to meet the contractual requirements contained in affiliation agreements between the university and the various healthcare facilities.

IV. Criminal Background Check Report

1. Obtaining a Criminal Background Check Report. The School of Dentistry will designate approved company(ies) to conduct the criminal background checks and issue reports directly to the School of Dentistry. Results from a company other than those designated will not be accepted. Students and applicants must contact a designated company and comply with its instructions in authorizing and obtaining a background check. Students and applicants are responsible for payment of any fees charged by a designated company to provide the background check service.

2. Scope. Criminal background checks include the following and cover the past seven years:

   a. Criminal history search, including convictions, deferred adjudications or judgments, expunged criminal records, and pending criminal charges involving felonies, Class A, Class B, and Class C violations
   b. Social Security Number verification
   e. General Services Administration (GSA) (http://www.gsa.gov/portal/category/100000) List of Parties Excluded from Federal Programs
   g. Applicable State Exclusion List (Texas)

3. Rights. Students and applicants have the right to review the information reported by the designated company for accuracy and completeness and to request that the designated company verify that the background information provided is correct. Prior to making a final determination that will adversely affect the applicant or student, the School of Dentistry will provide applicants or students a copy of or access to the criminal background check report issued by the designated company, and inform them of their rights, how to contact the designated company to challenge the accuracy of the report and that the designated company was not involved in any decisions made by the School of Dentistry.

V. Procedure

1. Applicants

   a. The criminal background check report will be submitted to the Assistant Dean for Students for its review. If the report contains negative findings, the Associate Dean for Student Affairs may request that the applicant submit additional information relating to the negative finding, such as a written explanation, court documents and police reports. The Assistant Dean for Students, in consultation with the School of Dentistry administrative leadership team, will review all information available to it and determine whether the offer of admission should be withdrawn. For Advanced Education trainees, the background check report will be submitted to the Assistant Dean for Students and Advanced Education Program director in the relevant Department. Advanced Education Programs will review the information and, with consultation of the Advanced Education Committee, will make determinations about amending admissions decisions.

   b. Admissions decisions are final and may not be appealed.

2. Committee Review Standards. In reviewing the background check reports and any information submitted, a committee may consider the following factors in making its determinations: the nature and seriousness of the offense or event, the circumstances surrounding the offense or event, the relationship between the duties to be performed as part of the educational program and the offense committed, the age of the person when the offense or event occurred, whether the offense or event was an isolated or repeated incident, the length of time that has passed since the offense or event, past employment and history of academic or disciplinary misconduct, evidence of successful rehabilitation, and the accuracy of the information provided by the applicant or student in the application materials, disclosure
forms or other materials. The committee should bear in mind both the safety interests of the patient and the workplace, as well as the educational interest of the student. In reviewing background checks and supplementary information, advice may be obtained from university counsel, university police, or other appropriate advisors, including state regulating bodies such as licensing boards.

3. Deferment. A reviewing committee may extend an offer of admission for up to one year while the matter is resolved.

VI. Confidentiality and Record Keeping

1. Background check reports and other submitted information are confidential and may only be reviewed by university officials and affiliated clinical facilities in accordance with the Family Educational Records and Privacy Act (FERPA) (http://www2.ed.gov/policy/gen/guid/fpco/ferpa).

2. Students. Criminal background check reports and other submitted information of students will be maintained in the School of Dentistry in accordance with the university’s record retention policy for student records.

3. Applicants Denied Admission. Criminal background check reports and other submitted information of applicants denied admission into the program will be maintained in accordance with the university’s record retention policy.

VII. Other Provisions

1. The School of Dentistry shall inform students who have negative findings in their background check report and are nonetheless permitted to enroll that the School of Dentistry’s decision is not a guarantee that every clinical facility will permit the student to participate in the educational program at its facility, or that any state will accept the individual as a candidate for registration, permit or licensure.

2. A criminal background check will be honored for the duration of enrollment if the student is continuously enrolled. A student who has a break in enrollment is required to complete a new criminal background check. A break in enrollment is defined as non-enrollment of at least one semester in the approved curriculum of the certificate or degree program. However, a student whose attendance has been suspended due to a licensing agency’s eligibility certification process will not be considered as having a break in enrollment. An officially approved leave of absence is not considered a break in enrollment.

3. Falsification of information, including omission of relevant information, may result in denial of admission or dismissal from the educational program.

4. Criminal activity, which occurs while a student is in attendance at the university, must be reported immediately by the student to the School of Dentistry administration. Criminal activity committed while in attendance and failure to report criminal activity that has occurred may result in disciplinary action, including dismissal, and will be addressed through the university’s academic or disciplinary policies.

Doctor of Dental Surgery (D.D.S.) Sample Plan of Study

The overall curriculum consists of approximately 4,500 hours of educational opportunities over a four-year program. The curriculum consists of fall and spring semesters in each of the four years with separate ‘summer’ sessions as part of the spring semester, between years 1 and 2, 2 and 3, and between years 3 and 4. The School of Dentistry curriculum is extensively hands-on with students receiving more than 2,000 hours of patient care learning experiences including a substantial number of hours providing patient care in community-based clinics. Approximately 75% of the curriculum is devoted to the diagnosis and treatment of oral diseases, 18% is devoted to underlying and foundational biomedical principles with emphasis on the pathophysiology of dental diseases and medical disorders that have oral manifestations, and 7% of the curriculum addresses practice management and public health. The four-year curriculum continuum is designed to provide dental students with a progressive learning experience in four phases that evolves from: (1) the biomedical foundations of normal human function, to (2) analysis of the causes and presentation of abnormalities, to (3) acquisition of skills needed for patient assessment and performance of procedural tasks, to (4) supervised provision of patient care in School of Dentistry clinics and affiliated community sites.

The following section reviews the focus of the curriculum.

The curriculum for the first two years features:

- Integrated basic and clinical sciences; foundation science in context; “just-in-time” learning
- Learning about the craniofacial region, before the systemic health and disease
- Reinforcement of didactic material through preclinical activities
- Earlier hand skills development/earlier clinical experiences
- Earlier transition to clinic with DS 2 didactic and preclinical curriculum ending in mid-March

The curriculum structure divides the courses into three tracks:
Doctor of Dental Surgery (D.D.S.)

- Human Health and Disease (HHD): Emphasizes the integrated foundation knowledge
- Foundations of Restorative Dentistry (FRD): Highlights clinical hand skill development
- Introduction to Patient Care (IPC): Combines tracks for non-surgical patient care experiences in small groups

The contemporary and integrated curriculum provides our students:
- An easier transition to junior clinic
- More meaningful clinical experiences due to the knowledge and skills learned in the first and second year curriculum
- More applications of critical thinking/problem solving skills

The summer between the sophomore and junior year allows students to enrich their education with selectives and clinical rotations. A minimum of one selective course is required.

Junior Year
The third year of the curriculum has a strong clinical focus as students apply the knowledge, skills, and values acquired in the freshman and sophomore years to the oral health care of patients. Junior students join one of eight General Practice Groups (GPGs) and remain in a GPG during their 3rd and 4th years of dental school. A team of faculty guides each GPG and work closely with students in their group to provide hands-on coaching and feedback. The GPGs provide students with an environment where they have continuous contact with a small group of instructors and also provides a forum for case conferences, student reports, faculty demonstrations and case reviews, and other learning activities to enrich the students’ clinical education. Learning experiences, derived from the process of patient assessment and treatment, are orchestrated to facilitate students’ acquisition of many of the 31 curriculum competencies that are evaluated by faculty assessment of students’ daily interaction with patients and performance on formal competency examinations where students provide patient care independent of faculty assistance.

Students also receive focused instruction and patient care experiences during discipline-specific rotations in the junior year; each rotation must be passed to progress to the senior year. An important component of the GPG experience is evaluation of students’ professionalism, which occurs via the Patient Management course. Students cannot progress to the senior year if they are found to be deficient in professionalism and consequently fail the Patient Management course. Additional information about this course appears in the junior year course descriptions.

Summer Session between Years 3 and 4
The summer between the junior and senior years allows students to enrich their education with selectives and clinical rotations. A minimum of a two-week clinical selective is required for all students except those who enroll in a full summer research selective. Students may continue selectives into the senior year.

Senior Year
Students continue their focus on acquisition of clinical competency through extensive patient care experiences within the GPG framework as previously described. Seniors are expected to demonstrate increasing capacity for independent functioning with less reliance on GPG faculty for guidance and assistance. Through the patient assignment function of the GPGs, seniors receive opportunities to provide care for patients with a wider variety of oral health needs and to treat dental problems that are more complex. To enrich and diversify their education, seniors participate in focused rotations in general dentistry, pediatric dentistry, and oral surgery at various community locations. Student evaluation in the senior year is based on several sources including: performance on exams that measure progress toward competency, daily assessment of patient care quality by supervising faculty; acceptable clinic utilization.

Below is a representative list of courses per year and credit hours that students must successfully complete. This list is subject to change based on changes recommended by the faculty to enhance student learning or to better meet the CODA (Commission on Dental Accreditation) or SACS (Southern Association of Colleges and Schools) Standards.

Dental Selectives

The School of Dentistry has a selective program that allows students to enrich their education through courses of their choosing.

Satisfactory completion of selectives will be recorded on the transcript as CR. No credit hours will accrue, and the computation of the GPA will be unaffected. When a student has been officially enrolled in a selective course, the selective becomes a mandatory part of the student’s curriculum and must be completed unless proper procedures for withdrawal are followed. Failure to withdraw properly or unsuccessful completion of the selective will be recorded on the transcript as an F grade. This will be treated by the Academic Performance Committee as any other failing grade in any required course.

Selective courses are offered primarily in the summer, but many are year-round as selectives by arrangement. Courses are offered to all level of students. Rising DS2 and DS3 students are required to complete a minimum of one selective. Rising DS4 students are required to complete a two-week continuous clinical selective, a six-week research selective, or another approved plan. The two-week selective may be one of the following:

- South Texas Rotation
- General Practice Dental Emergency Care (DECC)
- Oral and Maxillofacial Surgery
- Pediatric Dentistry Summer Selective

Current selectives are listed below; however, offerings may vary each year. An updated list is sent to students twice a year to allow them to plan ahead. The list with course descriptions, teacher, location, etc. can be found online at http://dental.uthscsa.edu/selectives/index.php.

1 Subject to change.

Freshman Year (Entering Class of 2017)

The curriculum is organized into three 'tracks': Human Health Disease (HHD), Introduction to Patient Care (IPC) and Foundations for Restorative Dentistry (FRD). The HHD track is an integrated approach to teaching the clinical sciences so that students are learning the foundation sciences in context of the clinical sciences. In IPC, students gain a familiarity with the patient care environment and acquire a variety of non-invasive clinical skills. FRD is designed to allow students to develop the manual dexterity and hand-eye coordination necessary to perform laboratory and clinical tasks required for clinical practice. The time frame for each track is equally divided: three each per week. A unique feature of this curriculum is that we start with the head and neck in year one and then move into other organ systems in year two.
**Freshman Year - Group A**

**First Year**

<table>
<thead>
<tr>
<th>Units</th>
<th>Semester</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>6.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>4.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>4.5</td>
<td>I</td>
<td>II</td>
</tr>
</tbody>
</table>

Total Units in Sequence: 19

**Freshman Year - Group B**

**First Year**

<table>
<thead>
<tr>
<th>Units</th>
<th>Semester</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>1.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>2.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>3</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>1</td>
<td>I</td>
<td>II</td>
</tr>
</tbody>
</table>

Total Units in Sequence: 21.5

A single grade at the end of the year is given for courses that extend through both semesters.

**Sophomore Year - Group A**

**Second Year**

<table>
<thead>
<tr>
<th>Units</th>
<th>Semester</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>2.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>3</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>2.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>2.5</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>2.5</td>
<td>I</td>
<td>II</td>
</tr>
</tbody>
</table>

Total Units in Sequence: 17
### Junior Year - Group B

**Third Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMD 7050 Preventive Dentistry Clinic¹</td>
<td>1.5</td>
</tr>
<tr>
<td>ENDO 7043 Endodontics Clinic¹</td>
<td>1</td>
</tr>
<tr>
<td>GEND 7001 General Dentistry Clinic¹</td>
<td>4</td>
</tr>
<tr>
<td>INTD 7020 Clinical Patient Management¹</td>
<td>5</td>
</tr>
<tr>
<td>OSUR 7051 Oral &amp; Maxillofacial Surgery¹</td>
<td>4</td>
</tr>
<tr>
<td>PEDO 7091 Pediatric Dentistry Clinic¹</td>
<td>2</td>
</tr>
<tr>
<td>PROS 7019 Fixed Prosthodontics Clinic¹</td>
<td>4.5</td>
</tr>
<tr>
<td>PROS 7092 Removable Partial Dentures Clinic¹</td>
<td>1.5</td>
</tr>
<tr>
<td>PROS 7099 Complete Dentures Clinic¹</td>
<td>2.5</td>
</tr>
<tr>
<td>RESD 7011 Operative Dentistry Clinic¹</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Junior Clinic Rotations**

All junior dental students enhance their clinical experiences by participating in several School of Dentistry and off-campus required clinical rotations including the following. These are subject to change based on community availability:

- Oral Surgery
- Dental Emergency
- Geriatrics
- Pediatric Dentistry
- Periodontics

**Total Units in Sequence:** 30.5

¹ A single grade at the end of the year is given for courses that extend through both semesters.

### Senior Year - Group B

**Fourth Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMD 8014 Oral Health Care System</td>
<td>1</td>
</tr>
<tr>
<td>COMD 8032 Jurisprudence</td>
<td>0.5</td>
</tr>
<tr>
<td>GEND 8026 Practice Administration¹</td>
<td>1.5</td>
</tr>
<tr>
<td>GEND 8078 General Dentistry Seminar¹</td>
<td>2</td>
</tr>
<tr>
<td>PERI 8015 Periodontics</td>
<td>0.5</td>
</tr>
<tr>
<td>PHAR 8009 Pharmacotherapeutics</td>
<td>2</td>
</tr>
</tbody>
</table>

**Senior Clinical Rotations**

All senior dental students enhance their clinical experiences by participating in several School of Dentistry and off-campus required clinical rotations including the following. These are subject to change based on community availability.

### Doctor of Dental Surgery (D.D.S.) Objectives/Program Outcomes

1. Students will be able to provide oral health care within the scope of general dentistry, demonstrate the capacity to lead oral health care teams, and collaborate with other health care providers.

2. Students will be able to manage the oral health care of infants, children, adolescents and adults, the unique needs of women, the elderly and patients with physical, cognitive, emotional or development challenges.

3. Students will be able to integrate biomedical knowledge, best quality research, clinical expertise and patient values to provide evidence-based oral health care, including critical appraisal of new treatment methods.

4. Students will be able to provide ethically and socially responsible oral health care in compliance with the laws and regulations governing the practice of dentistry, and use psychosocial, behavioral and patient centered approaches to provide oral health care for diverse patient populations within contemporary models of health care delivery and in multicultural work environments.

### Program Policies

**Academic Standards**

The academic standards for successful completion and grade assignment shall be established by the department or ad hoc committee under which the course is administered. In arriving at a final grade, consideration will be given to written, oral, and practical examinations as well as clinical performance when applicable. Non-cognitive factors such as performance under stress, integrity, initiative, interpersonal relations, and personal and professional characteristics will also be considered. A passing grade will not be awarded to a student whose performance in non-cognitive areas is unacceptable.

The academic standards for successful completion and grade assignment shall be established by the department or ad hoc committee under which the course is administered. In arriving at a final grade,
consideration will be given to written, oral, and practical examinations as well as clinical performance when applicable. Non-cognitive factors such as performance under stress, integrity, initiative, interpersonal relations, and personal and professional characteristics will also be considered. A passing grade will not be awarded to a student whose performance in non-cognitive areas is unacceptable.

The academic standards can be accessed on the School of Dentistry intranet; and at the beginning of an academic year, all students will be reminded of their existence and location.

Final Grades

A final grade shall be reported after completion of a course as:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
</tr>
<tr>
<td>C</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
</tr>
<tr>
<td>F</td>
<td>Failure in a graded course or failure to successfully complete an ungraded course</td>
</tr>
<tr>
<td>CR</td>
<td>Satisfactory completion of a required course for which no letter grade is given</td>
</tr>
</tbody>
</table>

Other Symbols Used on Transcripts

<table>
<thead>
<tr>
<th>EX</th>
<th>Exemption</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Incomplete. Not a final grade.*</td>
</tr>
<tr>
<td>WP</td>
<td>Withdrawed Passing</td>
</tr>
<tr>
<td>WF</td>
<td>Withdrawed Failing</td>
</tr>
</tbody>
</table>

* This grade is assigned by the course director when the student’s reason for failure to satisfactorily complete all required work is acceptable. A grade of ‘I’ must be corrected during the summer remediation period or by a specified time approved by the Academic Performance Committee.

**Recorded when a course is dropped before first examination/grade assignment.

Credit Hours and Grade Point Average

One [1] semester hour credit is given for each:

- 16 clock hours of lecture or conference
- 48 clock hours of technique laboratory
- 64 clock hours of clinic

Grade point average is calculated in the standard manner with the following weight assigned to grades:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
</tr>
<tr>
<td>CR</td>
<td>Not used in calculation of GPA</td>
</tr>
</tbody>
</table>

Midyear Progress Reports

Final grades awarded at midyear will be submitted to the University Registrar and the Associate Dean for Academic, Faculty and Student Affairs for each student enrolled in a course when that course has been completed.

Academic Warning

1. An academic warning is an official communication between the Associate Dean for Academic, Faculty and Student Affairs and the “at risk” student. Academic warning is a courtesy to the student, allowing for supportive dialog between the student and the School of Dentistry’s administration.

2. Academic warning is offered only at midyear. A student will receive an academic warning from the Associate Dean for Academic, Faculty and Student Affairs for achieving a grade point average less than 2.0 for either Group A or Group B courses completed during the fall semester.

3. An academic warning, unto itself, does not require prescribed action on the part of the student. It is expected that the student who has received an academic warning will correct midyear academic deficiencies by the end of the academic year.

Academic Probation

1. In addition to other reasons, a student receiving a final grade of “F” in a course at any time during the academic year will be placed on academic probation.

2. A student who is on academic probation is prohibited from graduation or promotion to the next academic year. Academic probation must be corrected, therefore, before the student may advance or graduate.

3. Unless the student is dismissed, a student will remain on academic probation until all academic deficiencies are corrected.

4. Once on academic probation, the student has a required timeline to improve his/her academic deficiencies. If not corrected in the prescribed amount of time, the student will be considered for dismissal.

   a. Except for senior students, the Academic Performance Committee does not recommend actions for correction of academic deficiencies until the end of the academic year when the student’s entire academic record can be considered. For senior students, the Academic Performance Committee will recommend actions for correction of academic deficiencies as soon as it is notified that a senior has failed a course or has received an “I” grade.

   b. Criteria

      i. A student will be placed on academic probation if s/he meets one or more of the following conditions:

         1. Receipt of a final “F” grade in any course at any time during the academic year.

         2. Receipt of a GPA less than 2.0 in either Group A or Group B courses of a year’s curriculum, unless the student is dismissed.

         3. Failure to pass National Board Dental Examinations, Part I by the end of the DS3 year.
4. Failure to pass National Board Dental Examinations, Part II by the end of the DS4 year.

c. Removal from Academic Probation Status

i. A student is recommended for removal from academic probation once all academic deficiencies have been corrected. The Academic Performance Committee recommends specific methods for students to improve their academic records:

1. The remediation of specific courses.
2. The repetition of the academic year in its entirety.
3. The establishment of an altered curriculum, to include correction of National Board deficiencies.

ii. A student no longer on academic probation is eligible for promotion to the next academic year or for graduation.

iii. If the student does not improve his/her academic record in the prescribed time period to allow removal from academic probation status, the student will be considered for dismissal.

Recommendations for Specific Academic Situations

1. Correction of an "F" Grade Deficiency. In an effort to help a student correct an "F" Grade Deficiency in one or more courses, the Academic Performance Committee may recommend one of the following courses of action:

a. Remediation of the course or courses for which an "F" grade has been assigned. Since failure to successfully remediate places the student in a category for academic dismissal, a student may elect to repeat the academic year in its entirety even though remediation has been recommended.

i. A course director will not initiate a remediation program for a student unless remediation has been recommended by the Academic Performance Committee.

ii. The remediation program previously designed and published in the course syllabus will be implemented by the course director.

iii. Remediation for senior students may be scheduled during the academic year, but all other remediation will be scheduled during a specified period in the summer.

b. Repetition of the academic year in its entirety. If remediation is not recommended by the Academic Performance Committee, the student must repeat the academic year in its entirety.

2. Correction of a Grade Point Deficiency

a. A student receiving a GPA below 2.0 in Group A and/or Group B courses of a year's curriculum will be considered for dismissal. However, after reviewing the student's academic record and considering any extenuating circumstances, the Academic Performance Committee may recommend one of the following actions in lieu of dismissal:

i. Remediation of one or more courses [F and/or D grades] designated by the Committee which will help raise the deficient GPA to 2.0 or above.

1. Since failure to successfully remediate a deficient GPA places a student in a category for academic dismissal, a student may elect to repeat the academic year in its entirety even though remediation has been recommended.

2. The remediation program will be designed by the course director.

3. Remediation for senior students may be scheduled during the academic year, but all other remediation will be scheduled during a four-week period in the summer.

ii. Repetition of the academic year in its entirety. If remediation is not recommended by the Academic Performance Committee, the student must repeat the academic year in its entirety.

3. Correction of National Board Dental Examination Deficiency

a. In an effort to help a student correct a National Board Dental Examination deficiency, the Academic Performance Committee may recommend completion of an altered curriculum which includes requirements for skills maintenance, preparation for retesting, and achievement of a passing grade in the National Board examinations.

b. The altered curriculum will be developed by the Associate Dean for Academic, Faculty and Student Affairs in conjunction with an Ad Hoc Committee appointed by the Academic Performance Committee.

c. Eligibility for promotion or graduation will be restored upon satisfactory completion of all requirements of the altered curriculum.

d. Failure to successfully complete all requirements of the altered curriculum by the end of the academic year will place the student in a category for academic dismissal.

e. Junior students who retake the National Board Dental Examinations, Part I in the "summer" preceding their senior year, are required to take the exam no later than May 20 of that summer. If a student has not passed Part I by the time grades are due for summer remediation, the student will not progress to the senior year unless this is due to extenuating circumstances.

4. Failure to Successfully Remediate or Repeat Year

a. The Academic Performance Committee will review the student's academic record and consider any extenuating circumstances before making a recommendation for dismissal. Only in exceptional circumstances will the Academic Performance Committee recommend another correction program in lieu of dismissal. No student is allowed to repeat an academic year more than once.
Final Grade for Course Remediation/Repetition

i. A grade of "C" is the highest grade that can be achieved in the remediation of a course. Following remediation of a course, the grade assigned will be the grade ("C", "D" or "F") achieved by the student as set forth in the academic standards of the remediation course.

ii. Following repetition of a course during repetition of an academic year in its entirety, the grade assigned will be the grade achieved by the student as set forth in the academic standards of the course.

iii. All grades achieved by a student in a course (i.e. original, remediation, repetition) will appear on the official transcript but only the most recent grade achieved will be used in calculating the grade point averages.

iv. Calculation of GPA Following Course Remediation or Repetition of the Year

1. "F" Grade Deficiency [REMEDICATION]: The grade achieved by the student in remediation of an "F" grade in a course is the grade that will be used in calculating the Group A or Group B GPA for the academic year and the overall GPA; however, both grades for the course will appear on the final transcript.

2. "F" Grade Deficiency [REPETITION OF YEAR]: The grades achieved by the student in all courses in the repetition of the year in its entirety will be the grades used in calculating the Group A and Group B GPA's for the academic year and the overall GPA; however, the previous grade or grades achieved in each course will also appear on the final transcript.

3. Grade Point Deficiency [REMEDICATION]: The grade achieved by the student in remediation of a course in an attempt to correct a deficient Group A or Group B GPA (less than 2.0) is the grade that will be used in calculating the Group A or Group B GPA for the academic year and the overall GPA; however, both grades for the course will appear on the final transcript.

4. Grade Point Deficiency [REPETITION OF YEAR]: The grades achieved by the student in all courses in the repetition of the year in its entirety will be the grades used in calculating the Group A and Group B GPA's for the academic year and the overall GPA; however, the previous grade or grades achieved in each course will also appear on the final transcript.

a. An option to appear before the Academic Performance Committee will be extended to the student before a vote is taken to recommend academic dismissal. The purpose of the appearance is to inform the Committee of extenuating circumstances which may have contributed to the student's performance. The student may request that other appropriate verbal and/or written testimony regarding these circumstances be presented at this meeting. Only members of the Committee will be present when the vote for dismissal is taken.

b. A student will be considered for academic dismissal if s/he meets any of the following conditions:
   i. Receipt of a GPA less than 2.0 in either Group A or Group B courses of the year's curriculum.
   ii. Receipt of a GPA less than 2.0 in either Group A or Group B courses of the year's curriculum after completing summer remediation or repetition of the academic year in its entirety.
   iii. Unsuccessful attempt to remediate a course or courses for which an "F" grade has been given.
   iv. Receipt of an "F" grade for a course or courses during the repeat of an academic year.

c. National Board Deficiency
   i. Failure to successfully complete all the requirements of an altered curriculum designed to correct a National Board deficiency, which includes skills maintenance, preparation for retesting, and achievement of a passing grade in the National Board Dental Examination, Part I or Part II.

d. Disciplinary Dismissal and Probation
   i. Violation of University regulations concerning standards of conduct which compromise professional integrity and/or competence will make a student eligible for dismissal. Procedures for dismissal will be governed by the guidelines contained in the Procedures and Regulations Governing Student Conduct and Discipline of the Health Science Center.
   ii. If not dismissed, a student may be placed on disciplinary probation. While on probation, any academic failure or professionalism relapse will be grounds for dismissal.

Honors
Graduation with Distinction in Dental Education

The School of Dentistry contributes to the national effort within the dental education community to increase students' awareness of the academic arm of the profession. The school also works to enhance awareness of career options in teaching, scholarship and academic administration. All of these efforts are extended to dental students through the Teaching Honors Program (THP). This program provides UT Health San Antonio School of Dentistry students with teaching and educational planning experiences and provides a way for them to learn about academic careers.

Gaining the Distinction in Dental Education recognition is reserved to students who complete additional enrichment coursework that immerses them into a world of teaching and academics. Students will have discussed career choices with faculty, participated in fundamental
teaching practices, taught in classroom, lab and clinical settings, and participated in academic fellowship opportunities.

**Description of the program**

In order for a dental or dental hygiene to graduate with the Distinction in Dental Education requires a student in good academic standing to complete selective courses unique to the Dental Education Teaching Honors Program. Throughout the dental and dental hygiene program, students progressively participate in faculty mentoring activities, acquire and apply teaching fundamentals needed for teaching in dental education. As senior students, in both dental and dental hygiene programs, participate in peer learning projects such as posing as “faculty for the day” where students use their previous knowledge and acquired skills to experience a day as an academician. The Director(s) for the School of Dentistry’s Teaching Honors Program monitors all students who wish to have the “Distinction in Dental Education” appear on their diploma and transcript and will need to submit supporting materials verifying completion of the activities and goals of the program. This includes verification of the core and enrichment selectives. Copies of all scholarly materials produced by student (i.e. abstracts, posters, manuscripts, evaluation forms, submission of assignments in the learning management system, or verified by faculty/mentor) shall be submitted to course director(s). Upon completion of all activities, the course director(s) will review all projects, and presentations for completion, and determine if graduating students have achieved “Distinction in Dental Education”. This list will be shared with the Office of Academic Affairs in the School of Dentistry. The course director(s) will also compile these names and share with the registrar’s office for conferring.

**Graduation with Distinction in Research**

The School of Dentistry recognizes individual student investigators who, in addition to completing their clinical dental program, have acquired research skills and accomplished significant research activity. The long-range goal is to foster scholarship and critical thinking, add to the body of scientific information and facilitate recruitment of students into dental research careers.

Gaining Distinction in Research Honors is limited to dental students who have demonstrated unusually significant scientific accomplishments. Students will have worked under the mentorship of an active scientist, prepared a research proposal, completed the research project, analyzed and presented the results at local and national research meetings and prepared a report for approval by the Dental School Research Committee.

**Description of the Program**

The Distinction in Research Program requires that a student in collaboration with a suitable faculty mentor completes a research project and prepares an original extended abstract that is suitable for incorporation into a peer-reviewed publication. The students should have played a significant role in the research project and will typically be listed as first author on an abstract and listed as a co-author on a peer-reviewed manuscript resulting from the research. The Director for Research and Associate Dean for Academic Affairs will monitor the program and bring candidates for consideration to the attention of the Dental School Research Committee. The Research Committee will review all applications and make recommendations to the Dean regarding the designation of the “Distinction” status for the students concerned. Students participating in the Distinction in Research Program are strongly encouraged to enter various Student Research competitions as part of their training experience. These include but are not limited to the Hinman Research Symposium competition, the American Association of Dental Research (AADR) Warner-Lambert Hatton Award, the AADR Caulk/Dentsply competition, the International Association for Dental Research/Colgate Research in Prevention Travel Award and the Block Travel Award.

**Faculty Responsibilities**

1. It is the responsibility of the faculty to administer examinations in such a manner that student performance accurately reflects individual levels of knowledge and ability. Methods for achieving this objective may include:
   a. New exams each year with totally new, or majority of new questions, or similar questions but in a new format or with new distractors.
   b. Randomized assigned seating of students in lecture rooms or laboratories.
   c. Multiple forms of the same examination. (Three forms of the examination are recommended.)
   d. Oral or essay examinations or components of examinations.

2. It is the responsibility of every faculty member to be aware of and comply with the rules and regulations of the Health Science Center delineated in the procedures and regulations governing Student Conduct and Discipline. In carrying out their responsibility for ensuring fair examinations and honesty on the part of all students, the faculty must comply with the following policies on examinations:
   a. Proctor all written examinations. (Three or more are recommended.) Proctors shall be present and observant throughout the examination.
   b. Proctor all practical examinations. (Two or more faculty proctors are recommended for each School of Dentistry MD multidiscipline laboratory — one for each bay.) Proctors should actively proctor throughout the examination and not engage in conversation with others, to avoid creating a distraction for students in the examination.
   c. Ensure that examinations are conducted in a quiet, comfortable atmosphere.
   d. Take immediate corrective action, as deemed necessary, to guarantee that the integrity of the examination is not compromised in case of observed violations of examination policies. Corrective action may include collecting examination papers or projects and/or relocating students.
   e. Report student misconduct or failure to follow instructions during examinations to the Course Director. If the misconduct falls under specific items in the course syllabus, the consequence as defined in the syllabus will be applied. If misconduct does not fall under specific items in the syllabus and is verified at the department level, it shall be reported to the Associate Dean for Student Affairs in compliance with procedures and regulations governing Student Conduct and Discipline of the Health Science Center.
   f. Schedule and conduct reexaminations whenever there is sufficient evidence to believe an examination has been compromised.
   g. Maintain tight security during preparation, proofing, faculty review, printing, transporting, and storing of examinations.
Examination questions stored on computer also must be protected from unauthorized access.

h. Ensure that students who ask questions during an examination are not given unfair advantage over other students if responses to questions are given. It is suggested that a policy be followed of not answering questions relative to interpretation of examination questions.

i. Identify casts, teeth, or other items to be used in practical examinations in a manner to preclude students from substituting items prepared prior to the examination.

j. Monitor students who need to leave the room during examination.

k. Course syllabi should be made available to students online on the day web registration begins, but no later than the first class meeting of the semester. After the first class, no changes can be made to the syllabus except for changes to logistical information. If the logistical information is changed, the updated syllabus must be posted within 48 hours so that it remains current.

Student Responsibilities

1. It is the responsibility of every dental/hygiene student to be aware of and comply with rules and regulations of the Health Science Center delineated in the procedures and regulations governing Student Conduct and Discipline. In carrying out their responsibilities and ensuring fair examinations and honesty on the part of all students, students must follow these policies:

a. Except when specifically authorized to do so, students shall not use notes, books, manuals, models, audio tapes, or any other items or sources of information (cell phones, PDAs, pagers, smart watches, watches or other electronic communication devices). During written examinations, such items must be left in a designated area of the examination room or, preferably, not brought into the room. During examinations in MD laboratories, these items shall be placed in closed cabinets.

b. Students shall not communicate with other students in any manner, i.e., verbally, in writing, by visual signals or code, etc., during written or practical examinations.

c. Before beginning an examination, students should be prepared to complete the examination. However, if a student must leave the room temporarily while an examination is in progress, the student’s examination materials shall be collected and held by a faculty proctor. Ordinarily, no more than one student will be permitted out of the examination at any one time. The student may not converse with another student or refer to reference material while out of the room.

d. If a student needs to do something outside the established protocol during a practical examination, such as unscrew or loosen a practical tooth or borrow an instrument, a proctor should be called for assistance and verification.

e. Students must refrain from all activities that detract from a quiet testing environment.

f. Students must take reasonable precautions to ensure that responses to examination questions or projects cannot be seen by other students.

g. Students must turn in their examination papers and practical examination projects promptly at the termination of an examination period, unless specifically instructed to do otherwise.

h. Students are expected to report any observed violation of these examination policies, or any other act they believe may compromise a fair examination process, to the Course Director or to the Assistant Dean for Students.

i. Students are expected to maintain the highest integrity during the examination.

j. If testing is in an electronic format, students must adhere to the specific policies governing those exams. Policies will be updated and sent to the students at the beginning of the new academic year.

2. It is also the responsibility of every dental/hygiene student to request accommodations under the Americans with Disabilities Act (ADA) should be needed. The School of Dentistry does comply with the provisions set forth by the Americans with Disabilities Act (ADA) and the ADAAA. A qualified individual with a disability requesting accommodation must submit the appropriate request for accommodations under the Americans with Disabilities Act (ADA) as amended. Students, fellows and residents must submit a Student/Resident Request for Accommodation under the American with Disabilities Act (ADA), form ADA-100, to the Executive Director, Academic, Faculty, Student Ombudsperson and ADA Compliance Office with a copy of the current job description (if appropriate).

However, the School of Dentistry does not allow testing accommodations for preclinical or clinical skills testing. Skill tests are structured to simulate the general practice of dentistry.

Requests to Changes Schedule of Examinations

The official dates and times of all examinations are published in the final Class Schedules (http://uthscsa.edu/fsprec/schedules.asp) after consultation with Course Directors and representatives of all classes. Students or the Course Director may initiate requests for changes in the schedule of examinations. All requests should be submitted to the Office of the Associate Dean for Academic, Faculty and Student Affairs, as applicable.

A request to move an examination to a later date must be submitted at least two weeks prior to the original date of the examination. A request to move an examination to an earlier date must be submitted at least two weeks prior to the proposed date of the examination.

All requests for changes to the examination schedule published in the final Class Schedule must be accompanied by:

1. A written reason for the move that must be compelling and academically sound.

2. A written statement from the Course Director stating he/she is in agreement with the change.

3. The results (number of yes/no votes) of a secret ballot taken from all members of the class. The Associate Dean for Academic, Faculty and Student Affairs, as applicable will review the request and can approve it if the following requirements are met:

4. The request has been submitted within the guidelines.
5. The reason for the move is valid.

6. The Course Director is in agreement with the move.

7. No member of the class present and voting opposes moving the examination to an earlier date; or, 90 percent of those voting are in favor of moving it to a later date.

8. An appropriate classroom is available at the proposed time.

**Academic Performance Committee**

Seven full-time faculty members with at least five having primary appointments in the School of Dentistry are appointed to the committee. Absent voting members may not be represented by alternates.

The responsibility of this committee shall be to recommend to the Associate Dean for Academic, Faculty and Student Affairs appropriate action regarding the academic performance of students. Recommendations of this committee shall be based on established criteria set by the Faculty Council and may include promotion, academic warning, academic probation, an altered curriculum, remediation, repeat of the academic year or dismissal.

Chair – The Chair shall be appointed from the voting faculty members of the committee by the Associate Dean for Academic, Faculty and Student Affairs, with approval from the Dean. Vice-Chair - The Chair shall appoint a Vice-Chair from the voting faculty members of the committee. Secretary - The Chair shall appoint a Secretary to take Minutes of all meetings. The term of office shall be for three years.

**Academic Grievance Policies**

**Due Process Grade Assignment Disagreement**

A student wishing to appeal the assignment of a grade must submit her/his grievance to the Course Director within seven (7) days of the grade assignment. The appeal mechanism for challenging a grade is limited to: (1) possible clerical errors in calculating or recording a grade, or (2) allegation of mistakes or unfairness in application of the published academic standards in the assignment of a grade. It is the responsibility of the student to substantiate her/his assertion that an incorrect grade has been assigned.

If the student’s concerns are not resolved after a meeting with the Course Director, the student may submit a written appeal to the appropriate Department Chair. The written appeal must be made within seven (7) days of the student’s meeting with the Course Director and must contain information to substantiate the assertion that an incorrect grade has been assigned.

If the disagreement is not resolved at the departmental level, the student may submit a written appeal to the Dean of the School of Dentistry within seven (7) days of the departmental decision. If the Dean agrees to review the matter, he/she will review only that the appeal process was conducted appropriately. This School of Dentistry policy supersedes any other grievance policies, and decisions made in this process are final.

**Appeals Process**

1. A student may appeal an Academic Performance Committee decision that recommends a) remediation, b) repetition of the year or c) academic dismissal. The student submits written notification of his/her desire to appeal to the Dean’s office. This written request must be received by the Dean’s office within 5 days following the student’s receipt of the written notification of the Academic Performance Committee’s recommendation.

2. The Dean will consult with appropriate individuals and render a decision to uphold or overturn the Academic Performance Committee decision. The student will receive written notification of the Dean’s final decision.

**Student Concerns**

Various mechanisms are available at all levels for student input regarding their concerns. Individuals and groups who respond to these concerns include course directors, advisors and the Associate Dean for Academic, Faculty and Student Affairs. Procedures for grievances can be found in the General Section of the Catalog.

The president of the Student Body Organization meets bimonthly with presidents of other Health Science Center student groups to discuss problems or concerns affecting students in all schools with the university President. In addition, once a month, the Dean of the School of Dentistry and Assistant Dean for Students meets with the presidents and vice presidents of all classes. Student liaisons for each course will meet with the respective course director as needed.

**Student Mistreatment**

Mistreatment of students will not be tolerated. Mistreatment, intentional or unintentional, occurs when behavior shows disrespect for the dignity of others and interferes with the learning process. Student mistreatment may take many forms all of which impact student performance. For more information click here. (http://catalog.uthscsa.edu/generalinformation/institutionalpolicies/studentmistreatmentpolicy)

**Clinical Attire and Grooming**

An excellent dental education is dependent on the number of patients and the diverse patient needs that allow students to provide a broad scope of oral health care to a large number of patients. As this is a totally voluntary system on the patient side, it is incumbent upon the School of Dentistry to provide an environment that gives patients the confidence to come to this institution knowing they will be treated in a professional manner, by professionals, and in a safe environment. To achieve this goal, first impressions are important; therefore, all students in the School of Dentistry need to look professional in dress and grooming since patient contact can occur in many areas of the building. When students have direct patient contact in the clinics, additional issues require students to pay particular attention to clinic attire and grooming because they affect patient safety as well as their own. The clinic manual is published on the School of Dentistry Intranet site, http://dserver.uthscsa.edu/. The manual includes general guidelines for attire and grooming, as well as specific requirements that relate to patient and personal safety.

**Class Attendance**

Students are expected to attend and actively participate in all regularly scheduled classes, laboratories, and clinical periods. The policy regarding attendance and the consequences for failure to comply is the prerogative of the course director and the department responsible for that portion of the curriculum, and will be provided in the course syllabus at the beginning of each course. It is the responsibility of the student to arrange with the faculty for making up any work that is missed.

Absences may be considered sufficient cause for issuing failing grades in courses requiring attendance.

**Reporting Absenteeism**

When a student must be absent from the School of Dentistry, he/she must report their absence online (https://fmcgi.uthscsa.edu/absence/). The office will maintain a roster of absentees and the reported reasons for absence.
In cases of absence during an assigned rotation or clinic, all students (including freshmen and sophomores) are responsible for contacting appropriate Rotation Directors immediately.

Students who will be absent from any examination must notify their Course Directors directly as well as complete an online student absence report.

Students are responsible for contacting Course Directors upon their return to school to schedule required makeup work.

**National Board Dental Examination Challenges**

Part I – Students are eligible to challenge Part I of the boards at the completion of the spring semester of the sophomore year provided they successfully completed the fall General Pathology course. Students are expected to take the exam between the end of the spring semester and beginning of the fall semester of the junior year. The School of Dentistry policy requires students to pass Part I to be considered for promotion to the senior year.

Part II – Students are eligible to challenge Part II of the boards in the summer before their senior year. The School of Dentistry policy requires students to pass Part II to be considered for graduation.

For both Parts I and II, the National Board policies require students to wait 90 days between attempts. Appeals to the 90 day requirement should be directed to the Assistant Dean for Students. Candidates who have not passed may apply for re-examination. An examination attempt is defined as any examination administration where the candidate has been seated at a computer at a test center, and electronically agreed to the confidentiality statement to start the examination. The Five Years/Five Attempts Eligibility Rule applies to examination attempts occurring on or after January 1, 2012. Examination attempts occurring prior to this date are not considered under this regulation. ELIGIBILITY FOR RE-EXAMINATION: Candidates must wait a minimum of 90 days between test attempts. Under the JCNDE’s Five Years/Five Attempts Eligibility Rule, candidates must pass the examination within a) five years of their first attempt or b) five examination attempts, whichever comes first. Subsequent to the fifth year or fifth attempt, candidates may test once every 12 months after their most recent examination.

**Leave of Absence**

Students in good academic standing who wish an extended leave of absence for extenuating physical or personal reasons must submit a written request to the Dean stating reasons for such a request, the period of time involved, and intentions concerning resumption of dental studies. The Dean will consider such requests on their individual merit.

Generally, a leave of absence shall not exceed one academic year. Any additional leaves of absence must be reviewed and recommended by the Academic Performance Committee and approved by the Dean. The Dean’s Office must be notified of intentions to re-enroll by the first day of April prior to the next academic year. Students who take a leave in the fall of the junior year will be required to repeat the sophomore year in order to regain the clinical skills and knowledge to provide patient care as a junior.

Upon approval, the student must request and complete a Student Clearance Form that is available from the Office of the University Registrar (317L MED).

**Readmission**

Readmission to the freshman year requires that a student apply again according to the procedures required for first-time applicants and be accepted in competition with other applicants for that year. Readmission into the sophomore, junior, or senior years is contingent upon available space in the class.

Application for readmission after a leave of absence must be in the form of a written request to the Dean and must include satisfactory evidence that the condition or conditions necessitating the absence have been corrected and that the student is able to resume dental studies. The request must be submitted no later than April 1 of the year the student wishes to be reinstated.

The policies contained in this Catalog concerning attendance, leave of absence, and readmission are those in effect at the time of publication but is subject to change. Students are responsible for inquiring about changes each year.

**Student Appeals and Grievances**

Student appeals and grievances are handled through established policies and procedures for the School of Dentistry as outlined in the General Regulations and Requirements section of this Catalog.

**Courses**

**BIOC 0003. Scientific Writing: Development and Defense of a Research Proposal. 2 Credit Hours.**

The course consists of writing a progress report describing research results during the last year. The course is required of all graduate students beginning the first semester after selection of a supervising professor.

**BIOC 4000. Special Topic. 4 Credit Hours.**

This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

**BIOC 4001. Biochemistry Research. 4 Credit Hours.**

This course is an opportunity to work in close collaboration with a member of the department on a problem in research of mutual interest. A sincere interest to acquire research experience or techniques, but no formal research training, is required.

**BIOC 5083. Hydrodynamic Methods. 2 Credit Hours.**

This course is intended to provide students with the opportunity to gain a solid understanding of hydrodynamics and macromolecular transport processes, such as sedimentation and diffusion. The focus will be on hydrodynamic methods involving analytical ultracentrifugation and light scattering. Topics in sedimentation velocity, sedimentation equilibrium, buoyant density sedimentation, as well as static and dynamic light scattering and the complementarity of these approaches will be discussed. Macromolecular interactions involving mass action, concentration dependent nonideality, and reaction rates are covered. This course will also cover a range of data analysis approaches including the van Holde-Weischet method, the second moment method, direct boundary fitting by finite element modeling, the C(s) method, the 2-dimensional spectrum analysis, genetic algorithm optimization, nonlinear least squares fitting approaches to user-defined models. Statistical analysis using Monte Carlo and bootstrap methods also will be covered.

Open for Cross Enrollment on Space Available Basis.
BIOC 5085. Biophysical Methods In Biology. 2 Credit Hours.
This course is required for all students enrolled in the Molecular Biophysics and Biochemistry track. The course covers modern biophysical methods for studying biological macromolecules in sufficient detail to understand the current literature. Topics to be covered include macromolecular structure determination by X-ray crystallography and NMR spectroscopy; absorbance, fluorescence, and EPR spectroscopy; circular dichroism; light scattering; mass spectrometry; and hydrodynamics, including diffusion, electrophoresis, sedimentation velocity, and sedimentation equilibrium. Open for Cross Enrollment on Space Available Basis.

BIOC 5087. Molecular Genetics And Biotechnology. 1 Credit Hour.
This course is required for all students enrolled in either Molecular Biophysics & Biochemistry Track. The objective of this course is to provide comprehensive treatment of approaches to experimental biochemistry and biophysics rooted in genetics, recombinant DNA technology, and genomics.

BIOC 5091. Special Topics In Biochemistry: Hydrodynamic Methods. 1 Credit Hour.
This course is intended to provide students with the opportunity to gain a solid understanding of hydrodynamics and macromolecular transport processes, such as sedimentation and diffusion. The focus will be on hydrodynamic methods involving analytical ultracentrifugation and light scattering. Topics in sedimentation velocity, sedimentation equilibrium, buoyant density sedimentation, as well as static and dynamic light scattering and the complementarity of these approaches will be discussed. Macromolecular interactions involving mass action, concentration dependent nonideality, and reaction rates are covered. This course will also cover a range of data analysis approaches including the van Holde-Weischet method, the second moment method, direct boundary fitting by finite element modeling, the C(s) method, the 2-dimensional spectrum analysis, genetic algorithm optimization, nonlinear least squares fitting approaches to user-defined models. Statistical analysis using Monte Carlo and bootstrap methods also will be covered.

BIOC 5092. Nuclear Magnetic Resonance Spectroscopy For Biochemists. 2 Credit Hours.
This course provides a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods in the study of the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts to be covered include an overview of pulse excitation, digital sampling, and Fourier transformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts to be covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.

BIOC 5093. Data Analysis In Biochemistry And Biophysics. 1 Credit Hour.
This course is required for all students enrolled in either Molecular Biophysics & Biochemistry Track, or the Diabetes & Metabolic Disorders Track, and is open to all students enrolled in the Integrated Multidisciplinary Graduate Program. The course covers statistical and mathematical analysis of typical biochemical data. Topics to be discussed include: enzyme kinetics, first and second order chemical reactions, ligand binding, scintillation counting of radioactivity, UV-VIS difference and derivative spectra, analytical ultra-sedimentation, and solution of multiple simultaneous equations using matrix algebra. Emphasis is placed upon the use of computers to analyze experimental data using programs running under Windows, or Linux platforms. Students will also become familiar with file transfers between these two platforms and the use of VNC viewer to enable their PC computers to be used as a Linux terminal.

BIOC 6010. Gene Expression and Omics. 2 Credit Hours.
This course presents 1) the principles of gene expression, including transcription, epigenetic regulation (histone modifications and DNA methylation), mRNA processing and degradation, translation, post-translational modifications, and protein degradation, and 2) the omics approaches for collective characterization and quantification of different aspects of gene expression, including genomics, epigenomics, proteomics, and metabolomics. Two main teaching formats are used in this course: 1) Didactic lectures in which information is delivered to the class, and 2) Paper presentations and discussions, in which students present assigned papers and lead discussions by the entire class. Although one student will present each paper, all students will be expected to read each paper and to be prepared to discuss it in the form of comments and questions. Prerequisites: Permission of the Course Director and IBMS 5000 (or equivalent).

BIOC 6015. Metabolic Disorders. 2 Credit Hours.
This course will present an introduction to dysfunctions in normal metabolic processes that lead to major human disorders and pathologies. Major topics to be covered include the causes and pathogenesis associated with Type 2 diabetes, obesity, and related hormonal signaling pathways. Other topics will focus on lipid and protein metabolic disorders, and on dysfunctions associated with mitochondrial and extracellular matrix defects.

BIOC 6029. MBB Journal Club and Student Research Presentations. 2 Credit Hours.
To be taken by all graduate students in the MBB track each semester starting with the second year. Students will each make one presentation per semester. Presentations will typically be of a recent journal article in the area of biochemistry or biophysics. Journal articles for presentations must be approved by the instructor. With permission, a student may present a summary of his or her doctoral research. In the Spring semester of their third year, students will present a review of literature relevant to their doctoral research. Grading will be based on both the presentation and involvement in class discussion.

BIOC 6033. Cell Signaling Mechanisms. 2 Credit Hours.
This course covers the molecular mechanisms of action of various extracellular mediators including hormones, neurotransmitters, growth factors, cytokines, etc., and cell signaling events. Several areas will be discussed including: (1) mechanisms of mediator synthesis; (2) interaction of mediators with specific receptors; (3) modulation by mediators of various second messenger systems including cyclic nucleotides, inositol phospholipids, calcium, protein phosphorylation, ion flux, etc.; and (4) intra- and intercellular mechanism for regulating mediator action. Open for Cross Enrollment on Space Available Basis.
BIOC 6035. Drug Design And Discovery. 2 Credit Hours.
This course covers state-of-the-art approaches to the discovery and design of drugs - from small molecules to peptides - as well as drug delivery vehicles, with a strong emphasis on structure-based approaches. Topics to be covered will include: high-throughput screening, fragment based drug discovery, protein:protein and protein:ligand interactions, use of nuclear magnetic resonance (NMR), surface plasmon resonance (SPR) and fluorescent methods in drug discovery, virtual (in silico) screening, peptides and peptidomimetics, structure based drug design, and use of macromolecular assemblies as drug delivery vehicles and as targets for drug therapy. Prerequisites: IBMS 5000 Open for Cross Enrollment on Space Available Basis.

BIOC 6036. Macromolecular Structure & Mechanism. 2 Credit Hours.
This course will cover the fundamentals of protein and nucleic acid structure and of enzyme catalysis. The course is required of students in the Molecular Biochemistry and Biophysics Track. Topics to be covered include: DNA and RNA structure, protein structure, protein folding, ligand binding by proteins, and enzyme catalysis. Open for Cross Enrollment on Space Available Basis.

BIOC 6037. Integration Of Metabolic Pathways. 2 Credit Hours.
The course is required of students in the Molecular Biophysics and Metabolic Pathways track. The objective is to provide an understanding of the individual reactions in intermediary metabolism and how the reactions are integrated by regulatory mechanisms. Topics include carbohydrate, lipid, and nitrogen metabolism and mechanisms of regulation of individual enzymes and metabolic pathways. Open for Cross Enrollment on Space Available Basis.

BIOC 6038. Surface Plasmon Resonance Workshop. 0.5 Credit Hours.
Surface plasmon resonance can be used to measure the equilibrium and rate constants of a variety of biomolecular interactions, including protein:protein, protein-small molecule, protein-nucleic acid and protein-phospholipid. In this laboratory intensive workshop, students will be exposed to the principles of experimental design, data collection, and data analysis utilizing state of the art instrumentation and model interactions.

BIOC 6043. Structure & Function Of Membrane Proteins. 2 Credit Hours.
This is a course targeted at students within any of the Graduate Tracks. The objective is to provide a broad view, allowing for in depth consideration in selected areas, of the structure and diverse functions of proteins within a membrane environment. Specific topics covered will include: ion selective channels, large membrane pores, membrane transporters, membrane pumps, and membrane receptors. The format of the course will be didactic lecture followed by student presentations of relevant topics. Open for Cross Enrollment on Space Available Basis.

BIOC 6069. Contemporary Biochemistry Student Review. 1 Credit Hour.
The course has two aspects. In the first, students will have the opportunity to put together a didactic lecture on a biochemical topic, essentially an oral review. Alternatively, students who attend a scientific meeting may pick a theme that was presented at that meeting in any of multiple venues (symposia, platform presentations, posters) and develop it as a presentation equivalent to an oral review. In each case, students will research the background of the material and present the latest findings. This is not intended to be a journal club but rather a didactic or teaching lecture. The course Director will work with the students ahead of time to assist them in preparing their presentation. The second aspect is that students who are not themselves presenting are required to attend the presentations. Biochemistry students must present at least once in years 3.5 of their matriculation in order to graduate with the Ph.D. degree. May be repeated for credit.

BIOC 6071. Supervised Teaching. 1-9 Credit Hours.
This course consists of teaching medical or dental biochemistry under close supervision of instructors. Management of small conference teaching groups as well as formal lecture presentations will be included.

BIOC 6097. Research. 1-12 Credit Hours.
This course consists of independent, original research under the direction of a faculty advisor.

BIOC 6098. Thesis. 1-12 Credit Hours.
Registration for at least one term is required of M.S. candidates.

BIOC 7099. Dissertation. 1-12 Credit Hours.
Registration for at least two terms is required for Ph.D. candidates.

Courses

COMD 7031. Professional Ethics. 0.5 Credit Hours.
This course provides a deeper understanding of the role that ethics plays in dental practice through a series of small-group discussions focused on the resolution of ethical dilemmas. It also provides a more thorough appreciation of the ethical principles and theory of normative ethics, as well as an understanding of the importance of dental research ethics, the role of ethics in the "business" of dentistry, and dentist's role in addressing social justice issues.

COMD 7050. Preventive Dentistry Clinic. 1.5 Credit Hour.
As part of the junior clinic, this course is for the clinical application of prior study of Preventive & Community Dentistry, Preventive Methods, Nutrition, Cariology, Caries Risk Management, and Sophomore Clinic. With the emphasis on dental caries, it also includes prevention of gingivitis, oral cancer, and orofacial trauma. Students record preventive history, diagnosis and document caries, request appropriate lab and dietary assessments, carry out a caries activity (risk) assessment, write a preventive plan, and evaluate outcomes.

COMD 8014. Oral Health Care System. 1 Credit Hour.
A series of lectures and panel discussions introduce students to the structure as well as methods of financing dental care. Concepts of both traditional and recently evolved forms of dental practice also are discussed.

COMD 8032. Jurisprudence. 0.5 Credit Hours.
An in-depth review of the Texas Dental Practice Act and the Rules and Regulations of the Texas State Board of Dental Examiners will be presented as preparation for the Dental Jurisprudence examination given by the Board. General review of the interface of the law and dental practice including dental torts, malpractice, partnerships, insurance, record keeping, and other related legal issues are presented.

Courses

CSBL 3005. Advanced Anatomy. 0 Credit Hours.
Selected students will participate in lectures, detailed dissections, presentations, and teaching of Pre-Matriculation students in the gross anatomy laboratory. A special project or readings in the surgical anatomy literature will be assigned. This elective is considered to be a full-time commitment (40 hours per week). Students are expected to 1) attend all lectures given in the Pre-Matriculation program, 2) to teach in all scheduled laboratory sessions, 3) to prepare and present prosections, 4) to help prepare a laboratory examination, 5) to write and present a literature review on an original topic of interest to the student related to the region of the body being studied.
Courses

DIAG 5007. Graduate OMR Clinic. 3 Credit Hours.
The Graduate Radiology Clinic is in operation five full days per week. Services include intra- and extra-oral radiography, panoramic, cephalometric, linear, and multi-directional tomography; sialography; arthrography; CT image processing; and planned CT image acquisition.

DIAG 5015. Panoramic Radiology. 1 Credit Hour.
This lecture course includes topics such as the principles of panoramic radiology, concepts of panoramic image formation, review of anatomic structures, clinical techniques, and recognition and correction of panoramic errors. Also, the uses and limitations of panoramic radiology as well as digital panoramic radiology will be discussed. The goal is to achieve competency in this subject matter. Proficiency will be achieved during clinical rotations in panoramic radiology as part of the graduate OMR clinic experience.

DIAG 5016. Head & Neck Anatomy. 1 Credit Hour.
This review course is designed to provide the resident with the opportunity to acquire an anatomical foundation for oral and maxillofacial radiology. The course uses interactive computer-based head and neck clinical anatomy software as well as digital libraries of radiographic and cross-sectional anatomical specimens. Numerous Internet-based references are also used to provide the student with the most up-to-date and graphic information. Clinical anatomic information is correlated with plain film, CT, and MRI images to provide a contextual reference between clinical and radiographic anatomy. Written and oral examinations are given to assess competency in this area.

DIAG 5017. Literature Review. 1 Credit Hour.
Each week a topic in Oral and Maxillofacial radiology is discussed. In addition, students receive a block of instruction in evidence-based literature evaluation. At each session a student leader presents from 2-4 papers that meet the current topic. Articles are approved by the course director beforehand for scientific accuracy, validity, and relevance. Students are expected to read the articles before the session and participate in the group discussion. Discussion is facilitated by a question and response format led by the course director. Literature from past reviews is filed for student reference.

DIAG 5018. Practicum In Oral Medicine. 4 Credit Hours.
Practice in clinical skills required for diagnosis, management, and treatment of oral and perioral diseases, including such special procedures as sialography, cytological smearing, biopsy, and culture taking is offered. A comprehensive review of the conditions that the dentist may be called upon to diagnose and treat as the result of the physical examination of the patient is the focus of this course. Topics include extraoral findings such as general appearance of the hands, eyes, ears, nose and neck; intraoral findings such as lesions as in lip swelling or palatal swelling; and color changes, surface changes, and other problems such as pain and functional disorders.

DIAG 5026. Diagnostic Imaging Of The Jaws. 4 Credit Hours.
The goal of this class is to achieve competency regarding the interpretation of plain and advanced images of hard and soft tissue conditions affecting the teeth, jaws, and surrounding structures of the maxillofacial complex including, but not limited to, the paranasal sinuses, salivary glands, and trauma. The material is presented and repeated through three basic formats: by pattern recognition, by disease process, and as further analyzed using contrast studies, CT, MR, nuclear scans, and ultrasound images where applicable. This course forms the basis for more advanced seminar and clinical courses through which proficiency is required to be achieved.

DIAG 5037. Oral And Maxillofacial Radiology Interpretation 1. 1 Credit Hour.
The overall purpose of this course is to provide students with learning experiences that will give them the opportunity to develop proficiency in OMR image analysis and interpretation. This course meets in one-hour sessions with a seminar or grand rounds format. Each week, students receive cases and are requested to generate a written report and present the case to other students and faculty. Cases include a variety of diagnoses that comprise the field of oral and maxillofacial radiology including both typical and unusual examples. Additionally, high-quality, properly exposed images are supplied. Many examples include plain film, CT, and MR for the same case. Additional cases include other imaging modalities such as tomograms, contrast studies, and nuclear scans. In some instances, glass slides and a microscope are used to correlate histological features with MR images, an activity much requested by students. Imaging particular to salivary gland disease and TMJ disorders will also be emphasized. Students will record these cases in a special section of their logbook and may, circumstances permitting, copy the cases for future reference or teaching. The course director’s collection of cases is one of the most extensive and is broadly representative and thus guarantees the student exposure to a variety of clinical cases which cannot be assured through the various clinical experiences during the time frame of the program.

DIAG 5040. Basic Principles Of Oral And Maxillofacial Imaging. 2 Credit Hours.
This is a didactic and clinical course aimed at providing oral and maxillofacial radiology residents with basic knowledge of oral and maxillofacial radiographic anatomy and helps the residents develop proficiency in routine and special OMF imaging procedures. The course consists of a complete review of plain film techniques used in OMF radiography and hands-on imaging exercises with radiographic phantoms. The radiographic anatomy displayed on these projections will be reviewed in lecture and exercise format using the practice phantom films and radiographic anatomy review sets. Boney anatomy and organ-based anatomy will be reviewed.

DIAG 5045. Radiation Physics. 3 Credit Hours.
This course presents the fundamental principles of radiation physics as they apply to medical and dental diagnostic radiology. Topics include the nature and production of X-rays, interactions of X-rays with matter, the physics of films and intensifying screens, the nature of the radiographic image, fundamentals of radiation dosimetry and protection, principles of tomography, and panoramic radiography. Topics also include computed tomography, particulate radiation and nuclear medicine, ultrasound, and digital image receptors and displays. Laboratory sessions provide a wide range of experience in institutional trainings and a course capstone project.

DIAG 5050. Fundamentals of Dental Radiography. 1 Credit Hour.
This lecture course reviews the basics of diagnostic radiography and introduces the latest techniques. Review includes sessions on exposure factors, projection techniques, film processing, and radiation protection. The major extraoral technique stressed in the course is panoramic radiography, including normal anatomy, technique errors, and interpretation. Skull projections are reviewed and basic principles and indications of special techniques such as xeroradiography, CT, nuclear medicine, and others are presented as time allows.

DIAG 5070. Supervised Teaching. 1 Credit Hour.
Graduate students are assigned to the various clinics, laboratories, and classes for the opportunity to acquire experience in teaching undergraduate students in a variety of situations. Supervision and evaluation of teaching performance is provided by the graduate faculty.
**DIAG 5091. Case Conference. 1 Credit Hour.**
This course meets weekly and serves as a venue for students to plan and present their cases to other students and faculty, and supply follow-up information where feasible.

**DIAG 5092. Diag Science Seminar. 1 Credit Hour.**
The format of this course includes presentations, reviews, and discussions of current cases from the Dental Diagnostic Science Clinic as well as cases of interest from the teaching file.

**DIAG 5093. Diag Science Seminar. 1 Credit Hour.**
The format of this course includes presentations, reviews, and discussions of current cases from the Dental Diagnostic Science Clinic as well as cases of interest from the teaching file.

**DIAG 5181. Principles Forensic Odontology. 1 Credit Hour.**
A didactic course covering such topics as forensic photography, forensic radiology, dental identification, mass disaster techniques, bite mark analysis, child abuse, and courtroom protocol. Students will be encouraged to investigate specific areas in more detail. (This course is an elective for the MS degree.)

**DIAG 6000. Introduction to Advanced Dental Diagnostic Science for Interns. 1 Credit Hour.**

**DIAG 6005. Clinical Path Conference. 1 Credit Hour.**
Formal review of clinical, radiographic, and histopathologic presentations of various conditions affecting the head and neck area and the oral cavity, in particular, is presented. A variety of cases are presented for group discussion with a view toward obtaining a differential diagnosis.

**DIAG 6007. Graduate Oral And Maxillofacial Clinic. 3 Credit Hours.**
The Graduate Radiology Clinic is in operation five full days per week. Services include intra- and extra-oral radiography, panoramic, cephalometric, linear, and multi-directional tomography; sialography; CT image processing; and planned CT image acquisition.

**DIAG 6008. Orofacial Pain. 2 Credit Hours.**
This course is designed to introduce the student to the field of orofacial pain. The course objectives include: introduction to orofacial pain, assessment of orofacial pain disorders, diagnostic classification of orofacial pain disorders, differential diagnosis and management of vascular intracranial disorders, differential diagnosis and management of neuralgias, nerve trunk pain and deafferentation pain, differential diagnosis and management of intraoral pain, differential diagnosis and management of temporomandibular disorders, and differential diagnosis and management of mental disorders.

**DIAG 6009. Noninfectious Diseases/Oral Mucosa. 2 Credit Hours.**
This course is designed to discuss a selected group of diseases of the oral mucosa with the primary purpose of presenting diagnostic and therapeutic guidelines. The role of oral medicine specialists in the care of noninfectious oral mucosal diseases, appropriate (e.g., timely and accurate) consultations/referral, definitive therapy, clinical review (e.g., the disease and/or side-effects of theory), disease prevention, and counseling of patients and relatives will be discussed.

**DIAG 6017. Literature Review. 1 Credit Hour.**
Each week a topic in Oral and Maxillofacial radiology is discussed. In addition, students receive a block of instruction in evidence-based literature evaluation. At each session, a student leader presents from 2-4 papers that meet the current topic. Articles are approved beforehand by the course director, for scientific accuracy, validity, and relevance. Students are expected to read the articles before the session and participate in the group discussion. Discussion is facilitated by a question and response format led by the course director. Literature from past reviews is filed for student reference.

**DIAG 6018. OMR Case Conference. 1 Credit Hour.**
This course meets weekly and serves as a venue for students to plan and present their cases to other students and faculty, and supply follow-up information where feasible.

**DIAG 6019. Chemosensory Disorders/Salivary Gl Dysfunctions. 2 Credit Hours.**
Chemosensory disorders affect in particular disproportionately a large segment of the elderly population, the fastest growing segment of the western industrialized nation. Also saliva plays a major role in the preservation and protection of the oral and pharyngeal tissues. When salivary gland function is altered, multiple stomatologic and systemic disorders can develop. This graduate level elective course is designed to make the graduate student (oral medicine) aware of the etiology, prevalence and mechanisms of normal and diseased chemosensation and salivary gland functions of the oral cavity. Its focus will be on the diagnosis and management of patients with taste, smell and salivary gland dysfunctions.

**DIAG 6020. Tumor Board. 1 Credit Hour.**
The class meets for one hour once a week at the MARC building and is sponsored by the Department of Otolaryngology and Head and Neck Surgery. Students will have the opportunity to learn case management and prognosis of patients with oral and maxillofacial and head and neck tumors, exposure to the diagnostic imaging work-up of the patients presented, interact with attending medical and dental specialists, attend special seminars related to tumor board, and have an opportunity to interact with various medical residents for further learning opportunities. Students are expected to share some of their learning experiences and present cases during case conferences to other OMR program venues such as graduate clinic.

**DIAG 6021. Medical Radiology Rotation. 2 Credit Hours.**
Medical radiology training occurs within the dental school using image-acquired data from a medical clinic. It also occurs in the University Hospital, at Wilford Hall Medical Center at nearby Lackland Air Force Base, and in a private radiology clinic. Cases using advanced imaging are available in the program director’s extensive collection to further enhance medical radiology training. A minimum of 7.5 semester credit hours are required. Each student must enroll in a minimum of three one-month rotations.

**DIAG 6022. Practicum In Oral Medicine. 6 Credit Hours.**
Practice in clinical skills required for diagnosis, management, and treatment of oral and perioral diseases, including such special procedures as sialography, cytological smearing, biopsy, and culture taking is offered. The focus of this course is a comprehensive review of the conditions that the dentist may be called upon to diagnose and treat as the result of the physical examination of the patient. Topics include extroral findings such as general appearance of the hands, eyes, ears, nose and neck; intraoral findings such as lesions in lip swelling or palatal swelling; and color changes, surface changes, and other problems such as pain and functional disorders.

**DIAG 6025. Diagnostic Imaging Of The Head And Neck. 4 Credit Hours.**
The goal of this course is to achieve competency regarding the interpretation of plain and advanced images of hard- and soft-tissue conditions affecting the teeth, jaws and surrounding structures of the maxillofacial complex including, but not limited to, the paranasal sinuses, salivary glands, and trauma. The material is presented and repeated through three basic formats: by pattern recognition, by disease process, and as further analyzed using contrast students, CT, MR, nuclear scans and ultrasound images where applicable. This course forms the basis for more advanced seminar and clinical courses through which proficiency is required to be achieved.
DIAG 6027. Advanced Imaging Technology. 3 Credit Hours.
This class will provide oral and maxillofacial radiology residents with proficiency level understanding of the physical principles of all the advanced imaging methods and techniques such as computed tomography, magnetic resonance imaging, ultrasounds, and radionuclide imaging commonly used in medical care, and understand the clinical applications of these advanced imaging modalities. This will also cover the fundamental basis for digital imaging, image enhancement and restoration, image analysis, image compression, image synthesis and image displacement.

DIAG 6041. Radiation Biology. 2 Credit Hours.
An introductory course in the basic concepts of radiation biology, this course is appropriate for dentists desiring an opportunity to gain additional knowledge of the biological effects of diagnostic and therapeutic levels of x-radiation. Concepts of designing an office for optimum radiation protection also are presented.

DIAG 6043. Advanced Radiation Biology. 1 Credit Hour.
An in-depth study of radiation biology is presented, emphasizing such topics as radiation risk, dosimetry, theories of radiation damage, radiation hygiene and protection, and the effects of therapeutic levels of radiation on the oral tissues.

DIAG 6049. Oral And Maxillofacial Radiology Interpretation 2. 1 Credit Hour.
The overall purpose of this course is to provide students with learning experiences that will give them the opportunity to develop proficiency in OMR image analysis and interpretation. This course meets in one-hour sessions with a seminar or grand rounds format. Each week, students receive cases and are requested to generate a written report and present the case to other students and faculty. Cases include a variety of diagnoses that comprise the field of oral and maxillofacial radiology including both typical and unusual examples. Additionally, high-quality, properly exposed images are supplied. Many examples include plain film, CT, and MR for the same case. Additional cases include other imaging modalities such as tomograms, contrast studies, and nuclear scans. In some instances, glass slides and a microscope are used to correlate histological features with MR images, an activity much requested by students. Imaging particular to salivary gland disease and TMJ disorders will also be emphasized.

DIAG 6051. Oral And Maxillofacial Radiology Interpretation 3. 1 Credit Hour.
The overall purpose of this course is to provide students with learning experiences that will give them the opportunity to develop proficiency in OMR image analysis and interpretation. Students receive cases and are requested to generate a written report and present the case to other students and faculty. Cases include a variety of diagnoses that comprise the field of oral and maxillofacial radiology including both typical and unusual examples. Additionally, high-quality, properly exposed images are supplied. Many examples include plain film, CT, and MR for the same case. Additional cases include other imaging modalities such as tomograms, contrast studies, and nuclear scans. In some instances, glass slides and a microscope are used to correlate histological features with MR images, an activity much requested by students. Imaging particular to salivary gland disease and TMJ disorders will also be emphasized.

DIAG 6052. Case Conference 3. 1 Credit Hour.
Oral and maxillofacial radiology resident will plan and present an assigned case to other students and faculty and provide follow up information where feasible. It will enhance the residents ability to write and present accurate case reports; teaches the ability to plan a case, and interact with the referring practitioner, and enhance their ability to recognize imaging characteristics of a disease or condition.

DIAG 6071. Supervised Teaching. 1 Credit Hour.
Graduate students are assigned to the various clinics, laboratories, and classes for the opportunity to acquire experience in teaching undergraduate students in a variety of situations. Supervision and evaluation of teaching performance are provided by the graduate faculty.

DIAG 6078. Literature Review 3. 1 Credit Hour.
During this course, oral and maxillofacial radiology residents will review the principles of evidence based medicine and learn how it applies to reviewing scientific articles. At each class session, a student will present articles from the current or classic radiology literature including radiation safety, periodontal disease, CT, systemic disease, digital imaging, endodontic disease, MRI, implants, bite-wings, tomography, developmental disorders, selection criteria, panoramic radiology, sectional criteria, trauma, forensics, inflammation, QARM, Caries, TMJ, tumors and biomedical modeling. Prerequisites: DIAG 6017.

DIAG 6079. Graduate OMR Clinic 3. 3 Credit Hours.
The Graduate Radiology Clinic operates 4.5 days per week and provides opportunities for oral and maxillofacial radiology residents to develop skills in intra- and extra oral radiography, panoramic, cephalometric, linear and multi-directional tomography, sialography, arthrography, and CT imaging processing and planned CT image acquisition. Prerequisites: DIAG 6007.

DIAG 6083. Forensic Odontology Lab. 1 Credit Hour.
Demonstration and application of information and principles are presented in this introductory course in laboratories of the Health Science Center and the Bexar County Medical Examiner’s Office. Successful completion of DIAG 5181 Principles in Forensic Odontology and this course will fulfill requirements for membership in the American Academy of Forensic Sciences.
presentations, faculty case presentations, topical lectures by faculty, and are provided the opportunity to achieve these goals through student case presentations. The seminars provide information to give students the opportunity to become sophisticated diagnosticians and skillful clinicians. Students are provided the opportunity to achieve these goals through student case presentations, faculty case presentations, topical lectures by faculty, and consultant visits. Prerequisite: ENDO 5017.

ENDO 5020. Introduction to Advanced Endodontics. 2.5 Credit Hours.
This course is a laboratory and lecture review of endodontic concepts and techniques starting at the basic level and progressing to the advanced. Various techniques of access preparation, chemomechanical canal preparation, and obturation will be taught. Students will have an opportunity to prepare and obturate the root canal system using a variety of techniques and materials. Procedures are performed under simulated clinical conditions in a mannequin. Following completion of obturation, students dissect and photograph tooth roots under a dissecting microscope to evaluate the effectiveness of the various canal preparation and obturation techniques.

ENDO 5052. Endodontic Surgical Anatomy. 1.5 Credit Hour.
This course consists of a series of four four-hour seminar sessions devoted to an in-depth discussion of endodontic surgical anatomy, surgical indications and techniques, and wound healing. This is followed by twenty hours of laboratory during which students practice actual surgical procedures on anterior, premolar, and molar teeth in teeth mounted on manikins using contemporary endodontic microsurgery techniques. Emphasis is given to the correct use of the surgical microscope for these procedures and adequate management of soft and hard tissues.

ENDO 5060. Current Concepts In Endo. 1 Credit Hour.
Modern thoughts and concepts in endodontics will cover diagnosis, the dental pulp and periapex, pulpalgia, and referred pain; vital pulp therapy; treatment of the acute apical abscess, cellulitides, restorative considerations for the endodontically treated tooth, endodontic surgery, and the cracked tooth. Other topics include avulsions, endodontic-periodontic interrelationships, current concepts in endodontics and an overview of endodontic research.

ENDO 5071. Supervised Teaching. 1 Credit Hour.
The goal of this course is to teach the student how to be an effective teacher. This course involves the student in teaching a sophomore lecture and laboratory course where dental students receive their initial exposure to endodontics. The student is given the opportunity to be actively involved in laboratory supervision of a small group of sophomore students as they perform specific endodontic procedures on extracted teeth. The student functions as an instructor side by side with endodontic faculty members who observe and critique the student’s performance.

ENDO 5073. Literature Review 1. 5 Credit Hours.
This course is designed to familiarize the student with pertinent articles, both topical and current, related to endodontics. The articles, selected from the dental, medical, and basic science literature, are assigned to the student to critically abstract and evaluate for research design, findings, and conclusions.

ENDO 5075. Literature Review 1. 4 Credit Hours.
This course is designed to familiarize the student with pertinent articles, both topical and current, related to endodontics. The articles, selected from the dental, medical, and basic science literature, are assigned to the student to critically abstract and evaluate for research design, findings, and conclusions.
ENDO 5080. Case Presentations 1. 4.5 Credit Hours.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 5082. Case Presentations 1. 4 Credit Hours.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 5095. Research. 6 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department research Committee, staff, and guests for evaluation and critique.

ENDO 5096. Research. 6 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department Research Committee, staff, and guests for evaluation and critique.

ENDO 5097. Research. 2 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department Research Committee, staff, and guests for evaluation and critique.

ENDO 5098. Research. 2 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department Research Committee, staff, and guests for evaluation and critique.

ENDO 6000. Introduction to Advanced Endodontics for Interns. 1 Credit Hour.

ENDO 6010. Clinical Endodontics 2. 6 Credit Hours.
An extensive clinical experience in the broad spectrum of endodontic practice is offered on the graduate level. Each student has the opportunity to maintain a comprehensive endodontic practice under the supervision of the director and staff of the postdoctoral program in endodontics.

ENDO 6012. Clinical Endodontics 2. 5 Credit Hours.
An extensive clinical experience in the broad spectrum of endodontic practice is offered on the graduate level. Each student has the opportunity to maintain a comprehensive endodontic practice under the supervision of the director and staff of the postdoctoral program in endodontics.

ENDO 6013. Clinical Endodontics 3. 0.5 Credit Hours.
An extensive clinical experience in the broad spectrum of endodontic practice is offered on the graduate level. Each student has the opportunity to maintain a comprehensive endodontic practice under the supervision of the director and staff of the postdoctoral program in endodontics.

ENDO 6031. Hospital Endodontics Rotation. 1 Credit Hour.
Conducted at the Audie L. Murphy Memorial Veterans Affairs Hospital ("VA"), this rotation consists of the diagnosis, treatment planning, and clinical treatment of endodontically involved teeth and supporting structures. This rotation provides the second-year postdoctoral endodontics student the opportunity to diagnose and treat endodontic problems on all types of inpatients and outpatients in the hospital setting.

ENDO 6032. Hospital Endodontics Rotation. 1 Credit Hour.
Conducted at the Audie L. Murphy Memorial Veterans Affairs Hospital ("VA"), this rotation consists of the diagnosis, treatment planning, and clinical treatment of endodontically involved teeth and supporting structures. This rotation provides the second-year postdoctoral endodontics student the opportunity to diagnose and treat endodontic problems on all types of inpatients and outpatients in the hospital setting.

ENDO 6060. Pulp Biology and Pain Pharmacology. 1.5 Credit Hour.
This purpose of this course is to provide the solid foundation knowledge in the biology of dental pulp and periradicular tissues necessary for appropriate clinical decision making in endodontic and restorative diagnosis and treatment, and to ensure that residents are prepared for future change in therapy or understanding new risk factors in disease.

ENDO 6073. Literature Review 2. 5 Credit Hours.
This course is designed to familiarize the student with pertinent articles, both topical and current, related to endodontics. The articles, selected from the dental, medical, and basic science literature, are assigned to the student to critically abstract and evaluate for research design, findings, and conclusions.

ENDO 6075. Current Literature Review. 1.5 Credit Hour.
These courses are designed to familiarize the student with pertinent endodontic literature published during the academic year. Students will be assigned specific articles for review and literature will be critically evaluated in a seminar format.
ENDO 6077. Current Literature Review. 1 Credit Hour.
The goal of this course is for the student to develop a biological understanding and scientific basis for the diagnosis and treatment of various endodontic subjects by a review of current literature articles. Each resident will be assigned specific articles for review. Residents will be required to prepare written abstracts of these articles and orally present them to the class.

ENDO 6078. Literature Review. 4 Credit Hours.
This course is intended to introduce the endodontic resident application manuscripts related to our specialty. The articles are selected according to their impact on clinical and biological considerations pertinent to the understanding of the endodontic practice. Subjects will be broad in scope and will cover the majority of topics and treatment alternatives of classic, relevant and contemporary literature. These manuscripts will be discussed and evaluated, placing emphasis on their strength to already existing endodontic comprehension.

ENDO 6080. Focused Regendo Research. 4 Credit Hours.
This course is intended to provide a focused review on the most relevant scientific evidence on regenerative endodontics. Emphasis will be given on the critical appraisal of existing scientific evidence on stem cell biology and tissue engineering related to regenerative endodontics. The articles are selected according to their impact on clinical and biological considerations pertinent to the understanding of the endodontic practice.

ENDO 6083. Case Presentations 2. 1 Credit Hour.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6084. Case Presentations 2. 4 Credit Hours.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6085. Case Presentations 2. 4 Credit Hours.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6086. Case Presentations 3. 2 Credit Hours.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6087. Case Presentations 3. 1 Credit Hour.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6087. Case Presentations 3. 1 Credit Hour.
This course is designed to provide faculty evaluation of endodontic cases treated by students. Critical evaluation will be made of the diagnosis, treatment plan, and treatment methodology. Differential diagnosis will be considered along with alternate treatment plans, and treatment methods. Reasons for any complications will be determined, and methods for preventing them will be discussed. The need for post-treatment follow-up examinations will be determined. The positive feedback provided by these courses is intended to increase student confidence and competence.

ENDO 6089. Research. 4 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department research Committee, staff, and guests for evaluation and critique.

ENDO 6090. Research. 4 Credit Hours.
The course requires the student to formulate a protocol for the purpose of conducting an original investigation. Following a critical evaluation and acceptance of the protocol, the student conducts a research project, suitable for publication, under the guidance of a mentor. The completed research paper is presented to the Endodontics Department research Committee, staff, and guests for evaluation and critique.

ENDO 6098. Thesis. 4 Credit Hours.
Completion of an acceptable thesis is required for the Master of Science degree. Registration in this course for at least one semester is required of all degree candidates. Admission to candidacy for the Master of Science degree is required in order to enroll in this course.

ENDO 7041. Junior Endodontics Lecture. 1 Credit Hour.
This course enhances the cognitive skills attained by the student that has successfully completed ENDO 6041 and ENDO 6142 in the Sophomore year. Topics covered include: endodontic radiography, endodontic diagnosis, endodontic irrigants and medicaments, evaluation of endodontic outcomes and retreatment, management of endodontic emergencies including pulp control, diagnosis and management of tooth root resorption, endodontic treatment risk assessment, management of the immature root apex and management of traumatic tooth injuries including tooth fracture, luxation and avulsion. The importance of the inter-relationships with other dental disciplines such as periodontics and restorative dentistry are also emphasized.

ENDO 7043. Endodontics Clinic. 1 Credit Hour.
Students perform endodontic diagnosis and treatment procedures necessary to provide endodontic treatment as part of overall comprehensive clinical patient care.

Courses

GEND 5027. Pain Control & Sedation. 3.5 Credit Hours.
The course is an in-depth, comprehensive assessment of pain control in dentistry. Beginning with neuroanatomy and pain, the course builds a valid foundation in basic science before advancing to a panoramic discussion of techniques in anxiety management and pain control. Behavioral management and conscious sedation techniques review are the major emphasis and are accompanied by demonstrations.
GEND 6000. Introduction to Advanced General Dentistry for Interns. 1 Credit Hour.

GEND 7001. General Dentistry Clinic. 4 Credit Hours.
The Junior General Dentistry Clinic course oversees student progress towards competency in: patient assessment and diagnosis, comprehensive treatment planning and assessment of outcomes, management of periodontal and pre-implant tissues, and management of malocclusion and occlusal disorders as described in Statements 01, 02, 07, and 13 of the HSC Dental School Competencies for Graduating Dentists. Junior students will be evaluated by GPG faculty on their independent efforts in satisfying the educational outcomes described for each of the four component competencies included in the course. Results of the evaluation will be kept in the student portfolio by the group leader. Unsuccessful attempts will be repeated until the student demonstrates adequate progress towards competency. A final grade at the end of the junior year will be Pass or Fail. Each component of the course must be passed to receive a passing grade.

GEND 7011. AEGD Fall Clinic 1. 4.5 Credit Hours.
AEGD students will gain clinical experience as they treat patients in the Advanced General Dentistry Clinic. Cases gradually increase in complexity and include treatment of medically compromised patients, implant cases, and interdisciplinary cases.

GEND 7012. AEGD Spring Clinic 1. 8 Credit Hours.
AEGD students will gain clinical experience as they treat patients in the Advanced General Dentistry Clinic. Cases gradually increase in complexity and include treatment of medically compromised patients, implant cases, and interdisciplinary cases.

GEND 7026. Practice Administration. 2.5 Credit Hours.
This course presents the various career choices available in dentistry and presents material to aid students in the career decision-making process. An introduction to the basic principles of beginning and managing a dental practice with emphasis on establishing a philosophy of practice, establishing goals, selecting practice modes, and choosing a location. The principles of office design and equipment selection also are covered.

GEND 8011. AEGD Fall Clinic 2. 7 Credit Hours.
AEGD students will gain clinical experience as they treat patients in the Advanced General Dentistry Clinic. Cases gradually increase in complexity and include treatment of medically compromised patients, implant cases and interdisciplinary cases.

GEND 8012. AEGD Spring Clinic 2. 7 Credit Hours.
AEGD students will gain clinical experience as they treat patients in the Advance General Dentistry Clinic. Cases gradually increase in complexity and include treatments of medically compromised patients, implant cases and interdisciplinary cases.

GEND 8026. Practice Administration. 1.5 Credit Hour.
This series of lectures deals with the business aspects of conducting a practice. Consideration of establishing and administering a practice, estate planning, bookkeeping methods, banking, marketing, management and utilization of personnel, and completion of a prospectus and office design project also are presented.

GEND 8077. General Dentistry Clinic. 26.5 Credit Hours.
Clinical experience for senior students under supervision of the Department of General Dentistry emphasizes comprehensive patient care in an atmosphere that closely simulates the private practice environment. Providing students an opportunity to accomplish procedures from each discipline of dentistry is the goal; therefore, students receive instruction from a faculty of general dentists. Various specialty departments provide didactic material, rotations in specialty clinics, and consultation. Senior Seminars, conducted by the Department of General Dentistry, entail lectures, problem-solving sessions, and presentations of selected cases designed to enhance the students’ knowledge of comprehensive clinical dentistry.

GEND 8078. General Dentistry Seminar. 2 Credit Hours.
This seminar presents topics relevant to clinical practice including application and selection of dental materials, an overview of dental equipment, and clinical techniques. It is intended to reinforce philosophies presented by the specialty disciplines, to provide the opportunity to discuss dental topics of current interest, and to promote dialogue between students and faculty.

Courses

INTD 1091. Independent Study. 4 Credit Hours.
Students will work directly with a faculty advisor or assistant dean to develop an independent plan of study.

INTD 3001. International Elective. 0 Credit Hours.
Students will work with the course director and Assistant Director of Global Health to identify an appropriate international elective site, using established sites/programs or one that the student discovers on their own. All rotations must be vetted and approved by the course director and will adhere to a community service-learning model that is a structured educational experience combining community service with preparation and reflection. Students are expected to help shape the learning experience around community-identified needs and advance insight related to the context in which service is provided, the connection between service and academic coursework, and students’ roles as citizens and professionals. Students will spend 4 weeks living and working at an international service site. Sites may allow for a range of experiences, such as participating in patient care, conducting clinical or public health research, and/or participating in a language immersion program. There may also be opportunities for patient education and emphasis on efforts of local empowerment, aiming to build up the communities in a sustainable way. Regardless of the focus, all sites must be supervised by qualified health care providers. Students are encouraged to integrate themselves into the health care delivery system, to explore community needs that they could address, and when possible, to strive to make an impact through community education, home visits, and research. Reflection essays serve as a way to process experiences, including clinical cases, new perspectives gained, and analysis of health care disparities, and strategies for the overcoming poverty-related health problems. Students are encouraged to share their experiences upon return through a formal presentation.
INTD 3002. School of Medicine Research Elective. 0 Credit Hours.
Students will participate in basic or clinical research projects under the supervision of university faculty. The goal of this elective is to immerse students in a rich research environment and provide an opportunity to work with research mentors to fully engage in the research process from writing the proposal to collecting the data to disseminating research results. This elective is open to students who already have an established working relationship with a faculty member and who wish time to continue their work, students who wish to establish a new project, and for students who are in the MD-MPH degree program and MD with Distinction in Research Program. Interested students must contact the course director prior to the enrollment date to express interest in the elective and receive further instructions on the application process for the research and identification/confirmation of the faculty mentor.

INTD 3030. Clinical Foundations. 3 Credit Hours.
The purposes of this completely on-line course are to: 1. Prepare early clinical students to increase knowledge in clinical settings including: a. Exposure to healthcare team members, b. Exposure to roles on clerkship (H&Ps, orders, SOAP notes, prescriptions, etc.), c. Interpretation of EKGs and radiographs, d. Interpretation of normal/abnormal lab values, e. Recognition of fatigue/strategies to combat fatigue in clinical settings, f. Basic understanding of ventilator management/ICU care, g. Patient insurance issues/patient health care financial resources, h. Avoidance of medical legal problems, i. Better success on exams, j. Performance of evidence-based searches in medical literature, k. Understanding fundamentals of translational research; 2. Assist students in developing new skills expected of early clinical students including: a. Intravenous catheter placement, nasogastric catheter placement, urinary catheter placement, and O2 management, b. Sterile gloving and sterile technique, c. Basic suturing/staple placement and removal, and 3. Prepare early clinical students for their roles in clinical settings including: a. Patient care under supervision, b. Patient privacy-HIPAA, c. Professionalism and responsibility to team and patients, d. Patient safety, e. Proper use of social media in patient care, f. Strategies to be best student on the first clerkship, g. OSHA and hand hygiene, h. Proper professional attire, i. Completion of evaluations on residents and faculty. The students will complete credentials for major clinical sites.

INTD 3058. Hospice and Palliative Medicine. 0 Credit Hours.
This rotation offers clinical experience in Hospice and Palliative Medicine (HPM). Palliative care provides treatment for seriously ill hospitalized and ambulatory patients and focuses on symptom management, enhancement of function, physical comfort, quality of life, psychosocial support, and communication about the goals of medical care for the patients as well as their families.

INTD 3091. Independent Study. 9 Credit Hours.
Students will work directly with a faculty advisor or assistant dean to develop an independent plan of study.

INTD 4007. Interprofessional Community Service Learning. 2 Credit Hours.
This is an innovative interdisciplinary service learning (CSL) course offered in partnership with the UT School of Pharmacy, PHR 270S, to allow medical students to integrate meaningful community service with instruction, preparation, and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities. This course will provide the opportunity for students to examine social justice and social determinant of health issues and apply these principles in a structured serviced learning practicum. The student-led service learning project will address the social and health needs of a community partner and will be conducted with the partner agency in a culturally competent manner. Through online learning modules, readings, and discussion; monthly class sessions; a group service learning project; and a structured service learning practicum, this course combines community service with preparation and reflection to foster civic responsibility in the health professions. Open for Cross Enrollment on Space Available Basis.

INTD 4008. Interprofessional Care in HIV. 0.5 Credit Hours.
Students will have the opportunity to learn how to function as a member of an interprofessional team in HIV case management. The objective is for students to become familiar with issues of patient safety, health literacy, medication reconciliation, and interprofessional teamwork in HIV care. This is an elective didactic course.

INTD 4009. Interprofessional Care in HIV. 2 Credit Hours.
Students will have the opportunity to learn how to function as a member of an interprofessional team in HIV case management, and become familiar with issues of: patient safety, health literacy, medication reconciliation, treatment guidelines, and interprofessional teamwork in HIV care.

INTD 4015. Humanism in Medicine Fellowship. 2 Credit Hours.
This is a longitudinal 4th-year elective to support and nourish the inherent altruism of our students. This elective will bring together like-minded students and faculty who have a passion for caring for the medically underserved in their communities. The students will take a leadership role in managing and directing the student-run clinics at the Alpha Home, SAMM Transitional Living and Learning Center, Haven for Hope, Travis Park Dermatology (under faculty supervision). Clinical experiences will be at these clinics. This elective will include a few evening seminars throughout the year in which students and faculty meet to discuss social justice, how to start a free clinic, homelessness and topics chosen by the students. Every student will complete a project of their choice over the year.

INTD 4018. Independent Elective in Ethics. 2 Credit Hours.
In this longitudinal course, students will be required to undertake an independent study into a specific issue in medical ethics or medical humanities. Students will be required to read on research methods in medical ethics as well as literature in their issue of interest, and then to propose and conduct an original study project, a literature review, a position paper, or an ethical analysis of a particular topic or case. Students will be expected to write an academically rigorous final research report of 10 to 15 pages. Students will be encouraged to produce a final paper that can be submitted for publication in a peer-reviewed bioethics or medical humanities journal. Students will be required to meet with the instructor and/or chosen faculty advisor over the course for assistance, guidance, and discussion. (Center for Medical Humanities and Ethics).
INTD 4019. Clinical Ethics. 2 Credit Hours.
Students in this two-week course will have the opportunity to focus on work in clinical ethics consultation. The student will be required to participate in rounds as an ethicist, do in-depth reading on clinical ethics consultation, observe clinical ethics consults, attend ethics committee meetings, and provide an educational seminar to hospital staff on an issue of ethical significance.

INTD 4025. Healthcare Practice and Policy Elective. 0.5 Credit Hours.
The Healthcare Practice Elective is an introductory-level, discussion-based, eight-hour course targeted to fourth-year medical students. The course focuses generally on practice and policy issues of payment methodologies, cost-effectiveness, and access to care.

INTD 4030. Preparing for Global Health Work. 2 Credit Hours.
This is a 2-week multidisciplinary course for 4th-year medical students who are planning future global health experiences, arising in response to enormous interest in international medicine, with increasing numbers of students choosing to spend time overseas during medical school. This preparatory course aims to provide a foundation of practical knowledge in global health to optimize the students' overseas experiences, facilitate their adaptation to working in different cultural settings, and maximize their impact in the communities where they serve. Topics include chronic and infectious disease, parasite infection, prioritizing community resources, health disparities, ethical dilemmas, cultural awareness, and professionalism. Course material is presented through a variety of approaches, including lectures, small-group case discussions, laboratory sessions, and online learning modules.

INTD 4045. Patient Notes- Enrichment Elective. 0 Credit Hours.
It is an interactive, inter-professional course that engages students in music listening sessions to teach students active listening skills. Through various forms of music, students will learn how to actively listen for specific details to gain insight on meaning, become comfortable with ambiguity and interpretation, and develop pattern recognition skills to quickly recognize deviation. Students will also develop stronger methodology for writing patients notes through conceptual practice of SOAP format notes for music pieces. Taught jointly by UTHSCSA faculty and professional musicians, this strategy of applying practical skills to an abstract concept such as music will refine these skills for students in clinical settings. Specifically, this course aims to improve interpersonal communication skills, and organizational note writing. This is also an opportunity for students to practice problems solving with other healthcare professionals.

INTD 4048. Art Rounds. 2 Credit Hours.
This is an interactive, interprofessional course that takes students to the McNay Art Museum to learn physical observation skills. Studies demonstrate that increased observational skills translate to improved physical examination skills. Using artwork as patients, students will have the opportunity to learn how to observe details and how to interpret images based on available evidence. Taught jointly by Health Science Center faculty and McNay museum educators, students will have the opportunity to develop and hone their observation, problem solving, and assessment skills. They will also observe, interpret, and give case reports on the original works of art to teach them the skill of verbalizing descriptions of what is seen, and not to accept assumptions made with a first impression. Open for Cross Enrollment on Space Available Basis.

INTD 4058. Hospice and Palliative Medicine Elective. 4 Credit Hours.
This rotation offers clinical experience in Hospice and Palliative Medicine (HPM). Palliative care provides treatment for seriously ill hospitalized and ambulatory patients and focuses on symptom management, enhancement of function, physical comfort, quality of life, psychosocial support, and communication about the goals of medical care for the patients as well as their families.

INTD 4103. Communication Skills. 0.5 Credit Hours.
To introduce fourth year medical students to the principles of conducting public interviews, presentations and effectively disseminating information to the communities they will serve.

INTD 4104. Improving Patient Outcomes. 0.5 Credit Hours.
This course is designed to increase a student's knowledge of and skills in identifying systemic problems with health care delivery and patient safety, collecting and analyzing data, generating solutions, presenting results and evaluating peers. The course objectives include facilitating systems thinking, exposing students to the ACGME general competencies (with emphasis on practice-based learning and improvement and systems-based practice), increasing understanding of health care economics and working in teams.

INTD 4105. Medical Jurisprudence. 0.5 Credit Hours.
The course will center on the Texas Medical Practice Act and applicable federal laws.

INTD 4106. Practical Ethics For Healers. 0.5 Credit Hours.
The course is the capstone of the four-year longitudinal curriculum in humanities and ethics. The goals are to reflect upon 1) physician's values, attitudes, and their intersection with cultural values and attitudes; 2) the historical and moral traditions of medicine in the context of society, politics, spirituality, and the health care system; and 3) the personal identity of a doctor. Open for Cross Enrollment on Space Available Basis.

INTD 4107. The Skin Around Us: A View of Skin Disease from a Humanities Perspective. 4 Credit Hours.
This elective is for fourth year medical students with a special interest in learning about skin diseases through a humanities perspective. Throughout the four week course, students will attend daily clinics, create a project and write an essay on activities encountered during the elective. The students will also complete brief writing assignments each week after watching videos, movies, and/or reading books.

INTD 4110. Getting Ready to Teach During Your Residency Program. 0.5 Credit Hours.
The goal of this 8-hour course is to help senior medical students, who will be residents in a few months, develop teaching skills that will enhance the quality of their interactions with students. The course will be conducted in an interactive workshop format to allow participants to practice important teaching skills for residents. These include 1) orienting and priming students to their responsibilities and roles and accepting the personal role of teacher and role model, 2) giving feedback to improve student performance, 3) helping students to improve their patient presentations-the use of questioning, and 4) coaching procedural and technical skills. The participants will practice these skills and receive feedback from their course peers and instructors based on the guidelines for clinical teachers in action with students and provide critiques. Large and small group discussions and role plays will be used to reinforce teaching principles.

INTD 4205. Veritas Mentors in Medicine Longitudinal Elective. 2 Credit Hours.
This is longitudinal elective and the course work requirements will be for 2 week credit and must be complete by March 1st. Evaluation of MiM performance will include feedback from faculty mentors and students.
INTD 4210. School of Medicine Research Elective Level 1. 4 Credit Hours.
Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. This elective is open to students who already have an established working relationship with a faculty member and who wish to continue their work. Students who wish to establish a new project, and for students who are in the MD-MPH degree program and MD with Distinction in Research Program. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective. Students will be able to 1) Formulate a research question and identify a research methodology to answer that question; 2) understand research ethics and apply an ethical approach to research design, implementation, and dissemination; 3) design a research study and gather quality data; 4) apply and interpret basic biostatistics relevant to the individual research project; 5) write scientific reports. The supervising faculty member will evaluate the performance of the student using a standard, research specific, medical student evaluation form. Students will receive a Pass or Fail summative grade at the conclusion of the 4 week elective. Faculty will be expected to give the student formative feedback after two weeks to assist the student in meeting all expectations to pass the elective.

INTD 4211. School of Medicine Research Elective Level 2. 4 Credit Hours.
Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. This elective is open to students who already have an established working relationship with a faculty member and reflects their increasing experience with the research process. INTD 4210 Level 1 elective is a prerequisite. As with INTD 4211 Level 2, the expectation is that enrolled students will continue with research experiences begun in INTD 4210 Level 1 and INTD 4211 Level 2 including students pursuing the MD-MPH degree and MD with Distinction in Research or produce evidence of past experience knowledge and/or skills which are deemed equivalent to these prerequisites. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective. Students will be able to formulate a research question and identify a research methodology to answer that question; understand research ethics and apply an ethical approach to research design, implementation, and dissemination; design a research study and gather quality data; apply and interpret basic biostatistics relevant to the individual research project; write scientific reports. The supervising faculty member will evaluate the performance of the student using a standard, research specific, medical student evaluation form. Students will receive a Pass or Fail summative grade at the conclusion of the 4 week elective. Faculty will be expected to give the student formative feedback after two weeks to assist the student in meeting all expectations to pass the elective.

INTD 4212. School of Medicine Research Elective Level 3. 4 Credit Hours.
Medical research is multidisciplinary and broad in scope. Students will participate in basic, clinical research, quality improvement, or patient safety research projects under the supervision of faculty in the Health Science Center. The goal of this elective is to immerse students in a rich scholarly environment and provide an opportunity to work with research/faculty mentors to fully engage in a scholarly research process from writing the proposal to collecting the data to disseminating results. Students enrolled in this course will have prior experience with research and ongoing research activities. As such, this elective is open to students who already have an established working relationship with a faculty member and reflects their increasing experience with the research process. INTD 4211 Level 2 electives is a prerequisite. As with INTD 4211 Level 2, the expectation is that enrolled students will continue with research experiences begun in INTD 4210 Level 1 and INTD 4211 Level 2 including students pursuing the MD-MPH degree and MD with Distinction in Research or produce evidence of past experience knowledge and/or skills which are deemed equivalent to these prerequisites. Interested students must submit a research elective application which includes the faculty mentor the student will work, to the office of UME, no later than 12 weeks before the research elective is to begin. Applications will be reviewed and confirmed or declined no later than 8 weeks prior to the proposed start date of the elective. Students will be able to formulate a research question and identify a research methodology to answer that question; understand research ethics and apply an ethical approach to research design, implementation, and dissemination; design a research study and gather quality data; apply and interpret basic biostatistics relevant to the individual research project; write scientific reports. The supervising faculty member will evaluate the performance of the student using a standard, research specific, medical student evaluation form. Students will receive a Pass or Fail summative grade at the conclusion of the 4 week elective. Faculty will be expected to give the student formative feedback after two weeks to assist the student in meeting all expectations to pass the elective.

INTD 5005. Core Course 1: Biochemistry. 2 Credit Hours.
Topics to be covered include: protein structure; properties of enzymes; structure, biosynthesis, and function of lipids; pathways and regulation of carbohydrate metabolism and biosynthesis and regulation of amino acids, nucleotides, and related compounds. Prerequisites: consent of instructor.

INTD 5007. Advanced Cellular And Molecular Biology. 4 Credit Hours.
This course provides an in-depth learning experience that instructs students on the fundamentals of molecular biology and cell biology as well as prepares the student to evaluate and design new research in the cutting-edge areas of modern molecular biology and cell biology. The course combines a didactic program of lectures along with a small group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in molecular biology: Chromatin structure, DNA Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation and in cell biology: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, the faculty provide students with didactic lectures on a current research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.
INTD 5013. Perio/Pros/Endo/Orth Interdisciplinary Course 1. 1 Credit Hour.
A seminar that brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontic postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

INTD 5021. Dental Biomed Core 2. 1 Credit Hour.
This course is a continuation of MSDS 5020 Dental Biomedical Core Course 1.

INTD 5023. Research Ethics. 1 Credit Hour.
The goal of this course is to provide the Master's student an opportunity to gain the essential standards necessary for training and education approved by the National Institute of Health. This course links to the web-based NIH Clinical Research Training On-Line Course http://www.cc.nih.gov/training/training/crt/infor.html for Principal Investigators that is required for all individuals conducting research. This course is open to current Health Science Center students. Open for Cross Enrollment on Space Available Basis.

INTD 5035. UTeach. 2 Credit Hours.
The course is designed for post-doctoral fellows, senior graduate students, faculty members, research staff and residents who are interested in a career in teaching and desire to acquire knowledge about learning processes and to develop educational planning, teaching and assessment skills to enhance their "teaching toolkit." UTeach (formerly University Teaching Excellence Course; UTEC) participants practice key skills needed for success in college-level teaching, working individually and in teams to accomplish course objectives. Classes will be supplemented by readings, worksheets and self-assessment inventories. Although the course will provide instruction in contemporary pedagogic techniques, it primarily emphasizes teaching science courses for undergraduates on campuses at predominantly undergraduate institutions (PUIs), rather than teaching graduate students and medical/dental students at the health science center (HSC) or other academic HSCs. Course instructors include faculty from the Schools of Medicine, Dentistry and Nursing at UTHSCSA as well as visiting faculty from local PUIs, St. Mary's University and Our Lady of the Lake University. UTeach has been offered for three consecutive fall semesters now (2015, 2016, 2017). It is sponsored by the San Antonio Biomedical Education and Research (SABER) Program that is supported by an Institutional Research and Academic Career Development Award (IRACDA) from the National Institute of General Medical Sciences of the NIH (PHS grant, K12 GM11726).

INTD 5040. Fundamentals Of Neuroscience1: Molecular, Cellular, & Developmental Neuroscience. 2 Credit Hours.
This course is intended to introduce students to a broad survey of the basics of molecular, cellular and developmental neuroscience. The course is organized into a series of three modules: biochemical and cellular properties of nervous system cells, development of neuronal systems, and neurotransmission and neuromodulation, which covers the fundamentals of these three areas. Current topics and concepts are discussed in discussion sessions that include student participation. Two components; Neuroscience students register for both PHYL 5041 and INTD 5040.

INTD 5043. Fundamentals Of Neuroscience 2: Systems Neuroscience. 3 Credit Hours.
This course, the second component of our broad survey of the basics of neuroscience, begins at the level of the neural circuit, and guides the students through an understanding of increasingly complex levels of organization and function in the brain. Topics include neurotransmitter systems, sensory and motor function, motivated behavior, regulation and integration of autonomic, behavioral, and emotional responses in the limbic system, higher order cognitive processes, and the neurobiological basis underlying some important psychiatric disorders and their treatment.

INTD 5046. Metanalysis In Cognitive Neuroimaging. 2.5 Credit Hours.
The objective of this course is to familiarize students with human functional brain imaging methods, experimental designs, statistical analyses, inferential strategies, and content. Students are guided through a literature-based research project that culminates in a quantitative metanalysis of a set of studies using similar tasks.

INTD 5047. Neuroanatomy. 2 Credit Hours.
The purpose of this course is to provide students with a practical working knowledge of the structure of both the peripheral and central nervous system. The emphasis will be on the organization of the human brain, although the brains of other species may also be included if appropriate for a specific brain region. The course will look at each of the individual components of the central nervous system in some depth but will also emphasize the complex integration of these various components into a functional brain. The topics covered in the course are specifically designed to mesh in time with those covered in Fundamentals of Neuroscience 2 describing the function of these areas. For this reason, it would be best if these two courses were taken concomitantly. The course will be didactic with digital images, models, and wet specimens included in the course.

INTD 5051. Research Methodology and Evidence-Based Practice. 2 Credit Hours.
This course is designed to introduce dental residents and faculty to critical thinking, research methodology, and evidence-based practice skills.

INTD 5064. Applied Statistics for Health Care Practitioners. 3 Credit Hours.
This online course focuses on the application of descriptive and inferential statistics in research studies. Students are expected to gain knowledge and skills that will enable them to understand, interpret, and evaluate statistical results; work with a consultant statistician; and use software to enter, analyze, and summarize data. Course requirements include homework assignments, online discussions and/or chats, and periodic projects.

INTD 5066. Laughter is the Best Medicine: An Interdisciplinary Elective about Humor, Healing, and Healthcare. 1 Credit Hour.
This class is a serious look at humor! The physiological and psychological benefits of humor, as well as its therapeutic use with patient interactions, will be explored. Students will learn how to develop and improve their personal use of humor to combat burn out, through techniques to enhance coping skills and stress reduction. Student participation and interaction is integral to the content delivery.
INTD 5067. Introduction To Bioinformatics And Computational Biology. 2 Credit Hours.
The course will be taught by faculty from Biochemistry, Cellular & Structural Biology, CCRI, Periodontics, and faculty from UTSA. The course will be an introduction to methods and tools for working with DNA sequences and protein families, learning basic Unix networking, overview of numerical modeling, systems biology approaches to complex diseases, gene expression analysis, bioinformatics in clinical research, statistical tools for complex datasets, proteomics, structural methods for protein biology, chemoinformatics, molecular modeling, and mathematical model building.

INTD 5074. Topics In Translational Medical Product Development. 1 Credit Hour.
It is crucial to understand the intricate process of translating basic research into market driven products, navigate the complex pathways of intellectual property management and the regulatory affairs of agencies such as the FDA. This course will offer students in biomedical sciences the opportunity to integrate industry-relevant training and experience with their basic science education. The course will explore the marketing and regulatory process by which a biomedical product is developed and brought to commercialization.

INTD 5075. Complementary Healthcare for the Clinician. 0 Credit Hours.
The goal of this elective is to introduce future doctors to practices outside of the classical medical school curriculum that promote an evidence-based approach to wellness. This is so that the medical students of the UTHSC School of Medicine are informed about the reality, evidence and rumor surrounding a variety of commonly used alternative and supplementary healthcare practices. The of this class is not to make the student an expert in areas such as acupuncture or yoga, but to be well informed of the role of such practices as it relates to patient treatment and wellness. To this end, all the classes will have a practical component which will allow the students to experience the alternative modalities in a structured setting.

INTD 5081. Topics In Cardiovascular Research. 1 Credit Hour.
This course is designed to familiarize students with the current literature related to cardiovascular disease. Each week a different research topic selected from the recent literature is presented and discussed. Students are expected to attend and participate in the discussions. In addition, students are required to prepare and present once during the semester. A list of previous and current course presentations will be available online.

INTD 5082. Responsible Conduct of Research. 1.5 Credit Hour.
This foundational course introduces students to core ethical content necessary for responsible research conduct. Through interactive seminars, students will learn about (1) scientists as responsible members of society (contemporary ethical issues in biomedical research and environmental/social impacts of research), (2) policies for research with human subjects and vertebrate animals, (3) collaborative research, (4) conflicts of interest (personal, professional, financial), (5) data acquisition and laboratory tools (management, sharing, ownership), (6) responsible authorship and publication, (7) mentor/trainee responsibilities and relationships, (8) peer review, and (9) research misconduct (forms of misconduct and management policies).

INTD 5091. Special Topics. 1-4 Credit Hours.
This is a placeholder course, for which graduate students may register, if they are unable to select a specific track core course at the time of registration. Tracks are: Biology of Aging, Cancer Biology; Cell and Molecular Biology; Genetics, Genomics, & Development; Membrane Biology & Cell Signaling; Metabolism & Metabolic Disorders; Microbiology & Immunology; Molecular Biophysics & Biochemistry; Molecular, Cellular, & Integrative Physiology; Neuroscience; and Pharmacology. The course may be repeated for credit.

INTD 5094. Independent Study. 1-4 Credit Hours.
This elective allows for detailed in-depth study in a specific area of study. The area and mode of study are to be agreed upon by the student and instructor. The course may be repeated for credit when the area of study varies. Clock hours are to be arranged. Prerequisites: Graduate standing and consent of instructor.

INTD 6002. Ethics In Research. 0.5 Credit Hours.
This course covers topics relevant to ethics in scientific research. The course is taught on a case-study basis, dealing with real and hypothetical situations relevant to the conduct of scientific research. Topics discussed will include, but will not be limited to: data management, peer review, recognizing scientific misconduct, authorship, and The University of Texas regulations relevant to human and animal research. This course is required of all doctoral graduate students.

INTD 6007. Advanced Cell Biology. 2 Credit Hours.
This course provides an in-depth learning experience that instructs students on the fundamentals of cell biology as well as prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology. The course combines a didactic program of lectures along with a small-group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in cell biology: Cell Signaling and Communication, Cell Growth, and Cell Death. Each week, the faculty jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area. Students and faculty will jointly discuss key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

INTD 6008. Mitochondria & Apoptosis. 1 Credit Hour.
This course will focus in depth on Mitochondria and Apoptosis. Topics will include: Mitochondria and Respiration; Mitochondria and Reactive Oxygen Species; Mitochondria and Apoptosis. It will provide an opportunity for a unique learning experience where the student can prepare to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. Each week, faculty will provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student’s prior understanding of the field and the state of the art in that area.
INTD 6009. Advanced Molecular Biology. 2 Credit Hours.
This course will provide an in-depth learning experience on the fundamentals of molecular biology as well as prepare the student to evaluate and design new research in the cutting-edge areas of modern molecular biology. The course combines a didactic program of lectures along with a small-group discussion format in which students interact closely with a group of faculty who have active research programs. The course focuses on active areas of research in molecular biology: Chromatin structure, Transcription, DNA Replication and Repair, Recombination, RNA processing and regulation, Protein processing, targeting and degradation. Each week, the faculty provide students with didactic lectures on a current research area. Students and faculty then jointly discuss Key publications that serve to bridge the gap between the fundamental underpinnings of the field and the state of the art in that area.

INTD 6011. Introduction To Science Of Teaching. 1 Credit Hour.
This course will provide insight into the basic skills of learning and teaching. Faculty from the Academic Center for Excellence in Teaching and the Graduate School will provide the opportunity to learn the skills, strategies, and experiences for a future in academia and teaching. Topics include lecture presentations on why scientists choose to teach, planning a student learning experience in addition to developing a lecture syllabus, curriculum and teaching portfolio and philosophy. The course is recommended for Supervised Teaching Course INTD 6071.

INTD 6014. Perio/Pros/Endo/Orth Interdisciplinary Course 2. 1 Credit Hour.
This seminar brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontic postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

INTD 6019. Pharmacotherapeutics. 1 Credit Hour.
This course is designed to review general principles of pharmacology; current and accepted pharmacotherapy for the medical management of pain, infection, and selected systemic diseases; and associated adverse drug events. It is based on the top 200 drugs dispensed by U.S. community pharmacies for the prevention, diagnosis, and/or treatment of disease with special reference to dentistry.

INTD 6040. Resident Lecture Series in Psychiatric Disorders and Psychopharmacology. 1 Credit Hour.
This is an interdisciplinary advanced elective in which students attend 17 lectures from the Psychiatry Year One Residents’ lecture series. These lectures focus on the psychopathology, epidemiology, and pharmacological treatments for illnesses such as schizophrenia, anxiety disorders, trauma related disorders, eating disorders, and sleep disorders.

INTD 6041. Basic Science Resident Lecture Series In Neurology. 1.5 Credit Hour.
This is an interdisciplinary advanced elective in which students attend 20 lectures, selected from the full offering of daily one-hour lectures comprising the Neurology Residents’ Basic Sciences lecture series. These lectures cover a range of topics, such as Epilepsy, Movement Disorders, the Thalamus, Parkinson’s Disease, Alzheimer’s Disease, Stroke, Sleep, etc., all given from a clinical perspective. In addition, graduate students will have the opportunity to observe or participate in at least two enrichment activities related topically to the lectures they attend, which may include such settings as case presentations, diagnostic training sessions, or clinical observations, again selected from the list of offerings included in the “Neurology Residents” series.

INTD 6045. Clinical Practicum In Neuroscience. 1 Credit Hour.
This course will provide students with a brief, but intense and very focused exposure to clinical practice in a relevant area of their choosing, designed and coordinated to best match their interests in close individual collaboration with a clinical mentor in one of the participating components: Neurosurgery, Neurology, Psychiatry, or Endodontics. Representative activities could include participation in case presentation and treatment planning, attending rounds with physicians and residents, direct observation of clinical procedures, patient interviews, follow-up care and outcome review. Potential venues may include inpatient psychiatric ward, sleep clinic, epilepsy clinic, stroke clinic, neurosurgical theater and surgical ICU. In consultation with the course director, students will first select one of the following sub-sections, then design their individually tailored clinical practicum experience with the coordinator for that section.

INTD 6046. Resident Lecture Series in Psychiatric Disorders and Psychopharmacology II. 1 Credit Hour.
This is an interdisciplinary advanced elective in which students attend lectures, selected from the full offering of weekly two-hour lectures comprising the Psychiatry Year One Residents’ lecture series. These lectures cover a range of topics, such as Substance Abuse, Depression, Biopolar Disorder, etc., all given from a clinical perspective.

INTD 6070. Teaching Excellence And Academic Skills (Texas). 1 Credit Hour.
This course, designed to assist graduate students and faculty in acquiring teaching skills, is composed of four modules, each covering a range of topics from lecture and clinical teaching to instructional development to assessing student achievement.

INTD 6097. Research. 0.5-12 Credit Hours.
This course is intended for first-year IMGP students only. Students will be required to attend a minimum of 10 departmental (any) seminars during the semester and submit a 100-150 word synopsis of each seminar within two weeks of the seminar.

INTD 6115. Perio/Pros/Endo/Ortho Interdisciplinary Course 3. 1 Credit Hour.
This is a seminar that brings together the residents and graduate staff from the periodontic, prosthodontic, endodontic and orthodontics postdoctoral programs to share clinically relevant multidisciplinary information. Patient diagnostic evaluations and treatment plans are evaluated in an interactive environment. Selected topics involving new advancements are presented and discussed.

INTD 7002. Neurobiology Of Learning And Memory. 1 Credit Hour.
This course will focus on recent findings and topics related to the underlying aspects of the neural basis of learning and memory. Students will have the opportunity to learn about: molecular basis of memory formation, consolidation and retrieval, memory and emotion, associative learning, memory and amnesia, and recognition memory and the medial temporal lobe. The lectures will be interactive and driven by discussions of key journal articles. Each week the first hour will be reserved for lecturing and the second hour will be reserved for a discussion of a journal article.
INTD 7003. Elective in International Medicine. 4 Credit Hours.
This elective serves as a vehicle for students to participate in international medicine rotations. Students will work with a faculty sponsor to identify a program, either a pre-established site or a site discovered by the student which requires faculty approval. This elective includes: 1) The Center for Medical Humanities and Ethics International Scholars Program in India, a competitive program requiring a separate application through the department of Medicine, 2) Shoulder to Shoulder program in Latin America, which requires a separate application process and some cost (airfare and small project fee), and is available October, January, and April, 3) Programs in Nicaragua, Mexico, Panama, and Guatemala, and 4) Other sites available through online directory: http://www.globalhealth-cc.org/GHEC/Resources/GHonline.htm. All rotations share a commitment to service learning - medical education and self-reflection that arises out of service to needy populations. Students spend up to 4 weeks (or possibly longer) living in an international site and participating in the care of patients, under the supervision of local and visiting health care providers. The clinical settings and caseload will vary based on the location. There may be opportunities for patient education and emphasis on efforts of local empowerment, aiming to build up the communities in a sustainable way. Students will be expected to integrate themselves into the health care delivery system, and when possible, to strive to make an impact through community education and home visits. For certain Latin American sites, fluency in Spanish is a prerequisite. Students are encouraged to seek similar service learning experiences with underprivileged populations in San Antonio and Border communities prior to or after the rotation. End of rotation "reflection essays" are required and will serve to process student experiences.

INTD 7005. Indian Health Care Preceptorship. 4 Credit Hours.
This elective offers the opportunity for an experience in the health care of Native Americans, coordinated through the Indian Health Service. Most experiences involve both inpatient and outpatient care under direct supervision of board certified family physicians or internists. Educational activities such as conferences, teaching rounds, etc., may vary from site to site. All clinical sites are located outside the state of Texas, including sites in New Mexico, Arizona and Alaska. Early application is recommended. Students completing appropriate application forms may be reimbursed for transportation costs and provided room and board by the Indian Health Service.

INTD 7007. Literature and Medicine. 2 Credit Hours.
In this course you are required to read short stories, poems, and a book of nonfiction. While many of the stories or poems directly address medical or ethical issues, the primary purpose is not to enhance your store of knowledge in these areas, but to promote your appreciation of these works through discussions with other students (online via Blackboard and in class) and with authors and lecturers. Your own contributions to the course - not just the insights you've gained as medical students but the wisdom you bring to the class as human beings - will be critical to its success. We hope that the readings will help you prepare for and process your clinical experiences, furthering your development as a person as well as physician. There will be no "right" or "wrong" answers in this course; rather, our goal is to encourage thoughtful and serious responses to the readings and a lively and fulfilling conversation about them and the issues they raise. Students from Christian Medical College in Vellore, India, will join in our discussion online. MSIV students will receive two credits for completion of this longitudinal elective. All students are expected to participate in class discussions. Grades are earned by reading assignments, attendance at class meetings, and posting primary and secondary responses to posted discussion questions. Open for Cross Enrollment on Space Available Basis.

INTD 7020. Clinical Patient Management. 5 Credit Hours.
This course is designed to help students develop skills in clinical behavioral dentistry through small group discussions, lectures, and routine patient treatment by application of the principles of coordinating patient care; communicating effectively with colleagues, staff, and faculty; and managing time, records, and environment. The students are required to manage their comprehensive care patients in the Junior Clinic following the principles presented in this course.

INTD 7074. Topics In Translational Medical Product Development. 1 Credit Hour.
It is crucial to understand the intricate process of translating basic research into market driven products, navigate the complex pathways of intellectual property management and the regulatory affairs of agencies such as the FDA. This course will offer students in biomedical sciences the opportunity to integrate industry-relevant training and experience with their basic science education. The course will explore the marketing and regulatory process by which a biomedical product is developed and brought to commercialization.

INTD 7091. Independent Studies. 1-9 Credit Hours.
Students will have the opportunity to use this course to study for the National Board, Part II examination, according to their own need. This course also will serve as a framework for a student returning from a leave of absence or from other protracted time away from classes or clinic. At the conclusion of the course, the enrolled student must demonstrate knowledge and/or skills and/or values consistent with the expectations for entering the level of course study from which the student left. An individualized course of study will be developed once the student is enrolled.

Courses

MICR 4000. Special Topic. 4 Credit Hours.
This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

MICR 4002. Advanced Medical Microbiology. 4 Credit Hours.
This elective is available to selected fourth-year students. Responsibilities during the period would include 1) the reading of 20-25 short articles out of Morbidity & Mortality Weekly Reports (generally 5-7 pages each), so as to be prepared to 2) lead discussions as MS1 students present summaries of these articles (1 article per student in a small group setting). In addition to enriching the curriculum of the first-year class, this elective will provide the MS4 student with the opportunity to be updated on some of the most current issues of the day in areas of infectious disease.

MICR 5003. Core Concepts In Microbiology & Immunology. 4 Credit Hours.
This course will provide an integrated view of the microbial world and the mammalian immune response. Students will receive a foundation in the basic concepts and experimental approaches that are crucial for understanding core concepts in pathogenic microbiology, virology, parasitology, mycology, and immunology through directed readings and didactic instruction. A special emphasis will be placed on integrating knowledge from each discipline using specific examples to illustrate important concepts in host-pathogen interaction.
MICR 5025. Eukaryotic Pathogens. 1 Credit Hour.
The course will provide students with the opportunity to gain a basic comprehensive understanding of parasitology and mycology. The first part of this course will focus on virulence mechanisms and the host immune response with respect to a variety of parasites that cause major human diseases. The second part of this course will cover several important areas of medical mycology including molecular biology, diagnostic/epidemiology, mating/phenotypic switching, morphology, pathogenesis, and antifungal therapies.

MICR 5026. Bacterial Pathogenesis. 1 Credit Hour.
This is an introductory course in microbial pathogenesis focusing on bacterial pathogens that are important in human disease. Students will receive a foundation in the basic concepts and experimental approaches that are crucial for understanding the discipline through directed readings and didactic instruction. Specific concepts, strategies, and mechanisms used by human bacterial pathogens to cause disease will be illustrated.

MICR 5027. Immunology. 1 Credit Hour.
MICR 5027 is designed to build on the immunological concepts covered in MICR 5051 given in the Fall semester and to put those concepts to use as we focus on understanding the world of the mammalian host response to infection and on applying fundamental immunological concepts to the understanding of current immunological research questions in a student-presentation and in-class discussion format. Prerequisite: MICR 5051.

MICR 5028. Virology. 1 Credit Hour.
This course focuses on the molecular and cellular biology of animal viruses, and their interactions with host cells. Many of the viruses to be covered in this course are medically significant or have provided critical information that has expanded our understanding of cell biology, immunology, development, and differentiation.

MICR 5029. Building Scientific Thinking Skills. 2 Credit Hours.
The goal of this course is to provide the opportunity for graduate students to develop critical thinking skills in reading scientific literature, developing/criticising scientific ideas and grant proposals and effectively communicating one's own scientific ideas with peers. The courses will be offered in three consecutive stages. First, each student will be assigned/encouraged to read articles focusing on a topic in the areas of Microbiology and Immunology and give a 50 minute review presentation on the topic to the class followed by questions/critiques from fellow students and faculty members. Second, each student is guided to develop a mini-proposal on a chosen topic followed by written critiques from fellow students and faculty members. Finally, each student is arranged to give an oral defense of his or her written proposal to the class followed by questions from fellow students and faculty members. Since the proposal writing and defense portions mimic the process involved in M&I track qualification examination, this course will not only have a long lasting impact on the students' scientific skill development, but also help prepare the students for the immediate qualification examination.

MICR 5030. Microbiology And Immunology Track Journal Clubs. 0.5 Credit Hours.
The MI track students, together with faculty members and other researchers, will meet once a week to discuss articles on life science with an emphasis on the Microbiology and Immunology disciplines. At each meeting, an individual will present one or several papers, or a review and related materials. The presentation will be followed by questions and discussions involving everyone present at the meeting. Each meeting is scheduled for one hour.

MICR 5031. Pathogenic Microbiology. 3 Credit Hours.
This lecture-only course integrates different disciplines (immunology, cell biology, genetics, biochemistry, molecular biology, physiology, and medical microbiology) with a central theme focused on molecular mechanisms of microbial pathogenesis in humans. Recommended prerequisites for this course are Biochemistry and Molecular Biology.

MICR 5035. Emerging Trends in Immunology and Infection. 2 Credit Hours.
An intense and advanced exploration of the primary literature focusing on the latest emerging trends in immunological research. The format will allow students to develop skills of in depth critical analysis and will involve a combination of student presentations of current data and discussions of the historical development and evolution of new directions in immunological research.

MICR 5051. Intro To Immunology. 2 Credit Hours.
This course is a study of immune responses with emphasis on experimental strategies for elucidating cellular and molecular mechanisms. Three phases of study: (1) immunochemistry and molecular biology of antibodies, lymphocyte receptors, and products of the major histocompatibility complex; (2) cellular interactions and immuno-regulation; and (3) immunopathologies (hypersensitivity, autoimmunity, immunodeficiency, transplantation rejection, and tumor immunology). Prerequisites: consent of instructor, courses in General Biology and Genetics recommended.

MICR 5090. Research Progress Report. 1 Credit Hour.
This course allows students to present a progress report on their research project in a formal setting. Students present a 50-minute seminar to members of the Molecular Immunology & Microbiology Discipline and the Department of Microbiology, Immunology and Molecular Genetics. Students are challenged to think independently and critically through practice of asking and answering critical questions as they organize their presentation, and they evaluate each other's research findings. This course serves as a mechanism for the students to develop and practice oral presentation skills in a friendly environment, learn to explain experimental rationale, scientific methods, results and their significance to colleagues. Research Progress Report (RPR) serves as a vehicle to encourage student productivity within the laboratory. The seminars are videotaped for review by the presenters.

MICR 5091. Current Topics In Microbiology And Immunology. 0.5-3 Credit Hours.
Students will be given an opportunity to gain in-depth understanding of selected topics in microbiology and immunology through a combination of library research and discussion with faculty. Prerequisites: consent of instructor.

MICR 5092. Special Problems. 1-9 Credit Hours.
The course provides an opportunity for the student to engage in a special research project or to develop proficiency in the use of certain laboratory methods. Prerequisites: consent of instructor.
**MICR 5095. Current Topics in Immunobiology and Host-microbe Interactions. 1 Credit Hour.**
This course is designed to enhance and expand on the existing Acquiring Presentation Skills (APS) course (MICR 5090) that is required of all graduate students in the Infection, Inflammation, & Immunity discipline of the IBMS Graduate Program, and the Ph.D. students of the Microbiology & Immunology Graduate Program. Although the APS course allows students to gain experience with regard to making formal lecture presentations of their research, it is limited in that students present their work only once a year, the opportunity for full discussion is limited by the time available after presentations, and being a course in which participants are exclusively students, there are no opportunities to observe examples of how skilled seasoned investigators (i.e., faculty and postdoctoral fellows) present their work. In the currently proposed course, graduate students will not only have more frequent opportunities to present their own research and receive vital feedback and critiques, but will also hear and critique presentations by more senior investigators regarding projects performed in labs throughout the Department of Microbiology & Immunology.

**MICR 6022. Advanced Microbial Physiology. 2 Credit Hours.**
This course consists of readings and conferences. The course includes current concepts and experimental studies in microbial structure-function relationships and regulatory mechanisms. Prerequisites: consent of instructor.

**MICR 6024. Advanced Microbial Genetics. 1-4 Credit Hours.**
This course consists of lectures and conferences. This course is an in-depth study of selected areas of microbial genetics and presentation and discussion of current literature in these areas. Prerequisites: Consent of instructor.

**MICR 6026. Advanced Molecular Genetics Of Eukaryotic Pathogens. 2 Credit Hours.**
This course will cover the major research methods and techniques used to study human fungal pathogens.

**MICR 6043. Advanced Topics In Virology. 2 Credit Hours.**
This course is an in-depth study of selected topics in animal virology at the molecular level. Prerequisites: consent of instructor.

**MICR 6050. Advanced Topics In Tumor Immunology. 1 Credit Hour.**
This course provides an opportunity for students to gain a solid foundation in modern tumor immunology. Topics include tumor antigens, autoimmunity, mechanisms of killing, dysregulation of inflammation, and counter measures mediated by tumor to thwart or subvert host immunity.

**MICR 6052. Advanced Immunobiology. 3 Credit Hours.**
This course consists of lectures only. This course is an in-depth study of the immune system and how it is regulated, including presentation and discussion of current literature in these areas. Prerequisites: MICR 5051 or consent of instructor.

**MICR 6071. Supervised Teaching. 1-9 Credit Hours.**
This course consists of teaching under the close supervision of instructors as laboratory assistants and as leaders in tutorial or review sessions. The more advanced students may present formal lectures in the classroom or lead discussions in the laboratory. Prerequisites: consent of chair or department.

**MICR 6091. Seminars In Microbiology & Immunology. 1 Credit Hour.**
Presentations and discussions of recent advances in various areas of Microbiology & Immunology. Invited speakers may be from inside or outside the HSC. Each graduate student in the M&I Track is expected to register for this course each fall and each spring semester for as long as the student is enrolled in graduate school.

**MICR 6097. Research. 1-12 Credit Hours.**
This course consists of independent, original research under the direction of faculty advisor. May be conducted in bacteriology, virology, mycology, parasitology, and immunology.

**MICR 6098. Thesis. 1-12 Credit Hours.**
Registration for at least one term is required of M.S. candidates. Admission to candidacy for the Master of Science degree is required.

**MICR 7099. Dissertation. 1-12 Credit Hours.**
Registration for at least two terms is required of Ph.D. candidates. In addition, Ph.D. candidates may be required to complete a course in Biostatistics. Prerequisites: Admission to candidacy for the Doctor of Philosophy degree.

### Courses

**ORTH 5010. Introduction to Orthodontics. 0.5 Credit Hours.**
The expected to gain understanding of basic clinic operations, laboratory procedures and collection of orthodontic database including study models, photographs, and orthodontic clinical exams.

**ORTH 5011. Orthodontic Techniques. 1 Credit Hour.**
This course is designed to present to the students all modern orthodontic techniques, approaches and appliance. The prerequisite for the course is solid biomechanics and understanding of importance of setting specific treatment goals for each patient. Discussions are led by the instructor on the cases treatment by the residents where the theoretical knowledge is applied.

**ORTH 5012. Orthodontic Lab Technique. 0.5 Credit Hours.**
The students are exposed to didactic teaching and practical hands on instruction about the design and fabrication of various orthodontic appliances including removable appliances, retainers and special custom designed appliances for complex orthodontic patients.

**ORTH 5013. Orthodontic Treatment Planning. 0.5 Credit Hours.**
The principles of the initial and advanced treatment planning are presented in this case based course. The student will learn how to effectively use databases including cephalometrics and 3-D imaging into making treatment decisions and presenting the treatment options to the patient.

**ORTH 5014. Literature Seminars. 0.5 Credit Hours.**
The students are taught to critically analyze and present current orthodontic literature, make effective presentations and learn how to categorize a research study within the hierarchy of research publications.

**ORTH 5015. Orthodontic Biomechanics. 1 Credit Hour.**
This course is designed to equip the student with knowledge of basic biomechanics and utilization of fundamental physical principles in orthodontics. It includes application of biomechanical principles in the design of the appliance and predictable tooth movement to achieve orthodontic movement goals.

**ORTH 5020. Clinical Orthodontics 1. 1 Credit Hour.**
During this clinical course, the student will be exposed to and learn all modern orthodontic techniques, approaches and appliances through treatment of about 65 orthodontic patients started by the student. In addition, about 20 transfer cases will be assigned to each student at the beginning of each year. The course will result in clinical competency of the student and preparation of at least six board quality cases for certification straight out of the residency program.
ORTH 5021. Clinical Orthodontics 2. 4 Credit Hours.
During this clinical course, the student will be exposed to and learn all modern orthodontic techniques, approaches and appliances through treatment orthodontic patients with several malocclusion and patients with craniofacial deformities started by the student, in addition understand the marketing side of orthodontics.

ORTH 5026. Clinical Orthodontics 2. 4 Credit Hours.
During this clinical course, the student will be exposed to and learn all modern orthodontic techniques, approaches and appliances through treatment orthodontic patients with several malocclusion and patients with craniofacial deformities started by the student, in addition understand the marketing side of orthodontics.

ORTH 5028. ABO Literature Review. 1 Credit Hour.
This series of seminars focuses on the literature required by the American Board of Orthodontics for the written board examination which the residents take during the spring semester of the second year. The seminars include in-depth coverage of the presented articles and topics and board-provided materials for preparing for the board written exam.

ORTH 5030. Case Analysis Seminars 1. 1 Credit Hour.
In this series of seminars, one resident is selected for each class to present a case of their choice with an in-depth analysis of the development of treatment planning, design of the appliance, and progress and outcome of the treatment. Other students in the audience are encouraged to ask questions and develop a discussion about the case and treatment approaches used.

ORTH 5035. Current Literature Review 1. 1 Credit Hour.
During this series of seminars attended by multiple of orthodontic faculty, the residents are presenting selected papers on current orthodontic topics. The seminars include in-depth discussion of the methodology, design of the study, interpretation of the results and conclusions based on the presented results. This course is designed to familiarize the student with all areas of current orthodontic literature and is a supplement to all didactic courses.

ORTH 5037. Orthodontic Lecture Series 1. 1 Credit Hour.
This series of orthodontic didactic lectures is a multifaceted course taught by several faculty during the course of the program. The topics covered in the course include periodontal consideration in orthodontics, orthodontic radiology, oral pathology, anatomy and histology and principles of growth and development.

ORTH 5070. Practice Management. 0.5 Credit Hours.
The practice Management course for orthodontics is an orthodontic specialty course designed to teach residents tools in managing a successful practice.

ORTH 5090. Research 1. 0.5 Credit Hours.
Following the course on Research Methodology, the student meets with the faculty and attends presentations on research topics from which he/she can select the topic of interest for the research project. Several components of that course throughout the duration of the program include understanding of research topics of interest to clinical orthodontics, design of clinical study and practical laboratory research on the selected project under the guide of student’s research mentor.

ORTH 6000. Introduction to Advanced Orthodontics for Interns. 1 Credit Hour.
ORTH 7073. Junior Orthodontic Lectures And Case Analysis. 1 Credit Hour.
This advanced lecture/case presentation series emphasizes the principles of orthodontic diagnosis and treatment planning for limited orthodontic procedures and the principles of comprehensive orthodontic therapy, interdisciplinary dentistry, and orthognathic surgery.

Courses
OSUR 6000. Introduction to Advanced Oral Surgery for Interns. 1 Credit Hour.

OSUR 7051. Oral & Maxillofacial Surgery. 4 Credit Hours.
The junior Oral and Maxillofacial Surgery experience will be a concentrated exposure to the specialty. OSUR 7051 consists of clinical experiences and a self-study, Canvas-based course. Biweekly seminars will supplement the self-study course. Junior students will be assigned to the Oral and Maxillofacial Surgery service for four weeks. During this time they will treat patients in the outpatient OMS clinic, the University Hospital Clinic Downtown, and they will work in the OMS Suite. Outpatient dentoalveolar surgery will be the focus. Students will have an opportunity to administer nitrous oxide sedation and observe cases where intravenous sedation is used. Opportunities may also be available for a limited number of students to observe and participate in the OR, ER, and on rounds at the University Hospital.

OSUR 8501. Specialist Advanced Oral and Maxillofacial Surgery 1. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesiology and pain control, journal club, oral pathology, prosthetics conference, and morbitity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.

OSUR 8502. Specialist Advanced Oral and Maxillofacial Surgery 2. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesiology and pain control, journal club, oral pathology, prosthetics conference, and morbitity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.

OSUR 8503. Specialist Advanced Oral and Maxillofacial Surgery 3. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesiology and pain control, journal club, oral pathology, prosthetics conference, and morbitity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.
OSUR 8504. Specialist Advanced Oral and Maxillofacial Surgery 4. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesia and pain control, journal club, oral pathology, prosthetics conference, and morbidity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.

OSUR 8505. Specialist Advanced Oral and Maxillofacial Surgery 5. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesia and pain control, journal club, oral pathology, prosthetics conference, and morbidity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.

OSUR 8506. Specialist Advanced Oral and Maxillofacial Surgery 6. 1 Credit Hour.
Each course in this sequence contains modules in: case conference, dentofacial deformities, anesthesia and pain control, journal club, oral pathology, prosthetics conference, and morbidity and mortality conference. Students at each of the various levels participate in common session seminar, lecture, discussion, and case presentation sessions. At each progressive course level, increased knowledge, higher skills, and more-deeply-informed attitudes are expected of the student.

Courses
PATH 4001. Hematology - University Hospital. 4 Credit Hours.
During this selective, through daily experience, consultations, and conferences, students will have the opportunity to learn to use CBCs, blood films, bone marrow studies, and other hematologic laboratory data in the diagnosis of basic hematologic, lymphoid, and coagulation disorders. This selective can be tailored according to the needs of individual students. The student interested in primary care can become involved in the performance of common laboratory tests done in the office. Daily contact with the pathologist will provide guidance in selection and proper utilization of laboratory testing for a specific patient's problem. For the student interested in pathology and laboratory medicine, the organization, management, maintenance of quality control, and consultative role of the Hematology Laboratory will be emphasized. During the selective period, a student may be assigned to spend one week in flow cytometry, molecular genetics, or cytogenetics.

PATH 4002. Blood Banking. 4 Credit Hours.
This selective is to acquaint the student with transfusion practices including the indications, dosage, expected benefits and risks of the different blood components, and the performance of therapeutic apheresis. The student will also be exposed to basic immuno-hematology and blood-banking techniques of acquiring, processing, testing, and transfusing blood components. Under the direction of the pathologist, a transfusion medicine fellow, a pathology resident, and a technical specialist in blood banking, the student will be required to perform basic techniques, participate in resolving the problems of patients having difficulties in transfusion, and evaluate the appropriateness of transfusion episodes. The selective can be tailored to offer more experience in transfusion practices for patient care or in organization, management, quality control, and other factors important to the student who may consider laboratory medicine as a chosen field. Students are required to participate in consultations and education programs offered by the blood bank.

PATH 4003. Hematology/Blood Banking. 4 Credit Hours.
This combination selective between the Hematology Laboratory and the Blood Bank may be arranged if student so desires.

PATH 4007. Pathology Research. 4 Credit Hours.
The course involves participation in a selected facet of ongoing research projects being conducted by a faculty member with assigned responsibilities for technical performance, reading, and interpretation of results.

PATH 4012. Anatomic Pathology: Fine Needle Aspiration. 4 Credit Hours.
Students will be given the opportunity to learn the technique of fine needle aspiration (FNA) biopsy. Direct supervision by faculty, cytology fellow and/or pathology resident in the method of specimen procurement and preparation of the FNA specimen occurs after initial instruction by the course director or their designee for palpable lesions. Participation at radiologically guided or endoscopically guided FNAs is also observed. Students are required to learn basic Modified-Giemsa staining with preliminary evaluation for adequacy of aspirate. There will be exposure to basic interpretation of FNA material from smears and cell blocks with emphasis on selection of ancillary testing along with clinical correlation. A separate clinic time is NO longer available and FNAs are done on an "on-call" basis from UHS cytology. Exposure to other areas of anatomic pathology that pertain to quality improvement of clinical medicine skills will also be made available. The experience may be customized depending on the student's future interests (pathology as a future vocation versus students planning on other fields of medicine).

PATH 4015. Forensic Pathology. 2 Credit Hours.
Daily responsibilities include the observation of forensic autopsies. Other responsibilities will include crime scene investigation, courtroom, and/or deposition exposure. During the rotation period, the student is expected to spend some time within the toxicology laboratory and must arrange this with the chief toxicologist. Near the end of the rotation, the student is expected to present a talk on a topic of current forensic interest to the staff during weekly case review. The student will be assessed by attendance, type and frequency of activities performed, and subjective evaluations by the medical examiner staff. This forensic pathology rotation must be pre-approved by the course director for both time period and length of rotation; recommended during the fourth year of medical school following core rotation in general autopsy and surgical pathology, though those rotations are not required.

PATH 4104. Naturopathic Medicine: Evidence-Based Critique. 0.5 Credit Hours.
This course strives to overcome the animosity between conventional and unconventional medicine by openly discussing and evaluating some of the naturopathic methods using the tools of evidence-based medicine. The objective of this course is to build basic knowledge about the mainstreams of naturopathic medicine such as fito-therapy, acupuncture and other reflexologies, Asian and European dietary systems, as well as stimulatory methods such as fasting and homeopathy. For each of these systems, diagnosis and treatment will be discussed from the evidence-based perspective.

PATH 4105. Evidence Based Medicine In Everyday Practice. 0.5 Credit Hours.
This course includes theory and methodological foundation, definitions and overview of evidence-based medicine, practical considerations, and reporting in evidence-based medicine.
PATH 4290. Clinically Applied Laboratory Medicine (CALM). 0.5 Credit Hours.
This course is an eleven-contact-hour mandatory course in laboratory medicine for MSIV students. Offered during the spring semester, the course is taught by members of the Pathology Department using patient case scenarios to illustrate laboratory medicine aspects of patient care management. An introductory one-hour lecture is presented to the entire class as a whole to provide course format information and small-group assignments. Groups of twenty-five to thirty students are formed based upon medical/surgical specialties; a student is assigned to a group according to chosen specialty. Patient cases are selected to emphasize important laboratory medicine points pertinent to a particular specialty.

PATH 5021. Biostatistics. 3 Credit Hours.
An introduction to Biostatistics, emphasis is upon application of statistical methods to biological problems. Topics include descriptive statistics, probability, hypothesis testing, and estimation.

PATH 5025. Individual Study in Biometry. 1-9 Credit Hours.
This course is for students who wish to study special problems in biometry or application of biometric methods to problems in the life sciences. A plan of study is determined by the student and the biometry faculty with topics varying according to the interests and requirements of the student.

PATH 5030. Oral Histopathology. 1 Credit Hour.
The course will review the histopathologic features of oral diseases. Cases signed-out on the Oral & Maxillofacial Pathology Biopsy Service will be discussed in a conference format utilizing a multiheaded microscope. Correlation of the histologic findings with the clinical and radiographic presentation of oral disease processes will be emphasized. Students will have the opportunity to learn the basis of surgical pathologic diagnosis and related ancillary special studies.

PATH 5035. Oral Pathology. 2 Credit Hours.
Clinicopathologic correlations, differential diagnosis, and therapeutic rationale are emphasized. The integration of history, physical findings, and clinical laboratory data with pertinent radiographic findings, clinical presentations, and anatomic pathology will be emphasized.

PATH 6026. Graduate Oral and Maxillofacial Pathology - Clinicopathologic Conference 1. 1 Credit Hour.
This course is presented in the first semester and consists of 16 one-hour sessions of instruction conducted as case conferences utilizing radiographic, histopathologic, and clinical projected glass slides and Kodachromes. Students present assigned literature reviews and cases emphasizing radiographic and histopathologic changes; discussions follow. Students include those from Oral and Maxillofacial Surgery, Periodontics, Endodontics, and Dental Diagnostic Sciences.

PATH 6027. Graduate Oral and Maxillofacial Pathology Clinicopathologic Conference 2. 1 Credit Hour.
This course is a continuation of PATH 6026 Grad Oral/Maxillofacial Path 1. It is presented in the second semester and consists of 17 one-hour sessions of instruction conducted as case conferences utilizing radiographic, histopathologic, and clinical projected glass slides and Kodachromes. Students present assigned literature reviews and cases emphasizing radiographic and histopathologic changes; discussions follow. Students include those from Oral and Maxillofacial Surgery, Periodontics, Endodontics, and Dental Diagnostic Sciences. Prerequisite: PATH 6026.

PATH 7000. Off Campus. 4 Credit Hours.
All off campus rotations must be approved by the designated faculty member prior to the beginning of the rotation (at least one week before the course begins). Credit will not be given for any rotation that has not been approved in advance. Required paperwork includes: "Course Approval" form, a written letter or email for acceptance form the physician preceptor with the start and end dates of the course/rotation, and a course description of your learning objectives and responsibilities during the rotation. Forms must include a complete address and telephone number for the off campus location or residence address for the student while at the off campus site. Forms will not be approved after the rotation has already begun. Contact the department for assistance with enrolling in this course.

PATH 7023. Oral & Maxillofacial Pathology: Clinicopathologic Conference. 1 Credit Hour.
This course is a series of 14 clinicopathologic conferences presented in an interactive case-based/clinical problem-solving format. Students will be expected to apply their fund of basic science knowledge learned in the prerequisite didactic pathology courses to simulated dental practice situations. Cases will be discussed systematically utilizing the S.O.A.P. format (Subjective, Objective, Assessment, Plan). Students are required to complete and turn in a worksheet and self-assessment for each case. Students are expected to read articles from current scientific literature posted on the course site and take the online challenge examinations. Lectures on the critical topics of head and neck cancer and skin cancer will be given by the course director.

Courses

PEDO 5020. Pediatric and Orthodontic Clinic 1. 2 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide each resident with clinical experience that will enable her or him to function as a proficient and competent provider of comprehensive dental services for children. Throughout the two-year program, residents will be expected to apply the information gained in the didactic part of the program to the delivery of dental care in the various clinical settings encompassed by the program. Although supervision by faculty is always provided, residents are expected to demonstrate increasing independence and initiative as they progress in clinical experience.

PEDO 5021. Pediatric & Orthodontic Clinic 2. 5 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide each resident with clinical experience that will enable her or him to function as a proficient and competent provider of comprehensive dental services for children. Throughout the two-year program, residents will be expected to apply the information gained in the didactic part of the program to the delivery of dental care in the various clinical settings encompassed by the program. Although supervision by faculty is always provided, residents are expected to demonstrate increasing independence and initiative as they progress in clinical experience.

PEDO 5022. Pediatric and Orthodontic Clinic 3. 6 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide each resident with clinical experience that will enable her or him to function as a proficient and competent provider of comprehensive dental services for children. Throughout the two-year program, residents will be expected to apply the information gained in the didactic part of the program to the delivery of dental care in the various clinical settings encompassed by the program. Although supervision by faculty is always provided, residents are expected to demonstrate increasing independence and initiative as they progress in clinical experience.
dentistry residents and faculty. The intern will be assigned their own
and working on pediatric patients under the supervision of pediatric
institution. Clinical activities will involved hands-on contact with patients
student will participate in weekly case presentations and interdisciplinary
and participate in presentations of journal articles in seminars. The
The student will attend didactic courses with the first year residents
similar curricular activities as the first year pediatric dentistry residents.

PEDO 6009. Orthodontic Core 3. 4 Credit Hours.
This course comprises a seminar series in which orthodontic diagnosis and
treatment principles for the primary and mixed dentitions are
cluded also are laboratory technique exercises in which
commonly used orthodontic appliances are constructed.

PEDO 5027. Orthodontics 2. 2 Credit Hours.
These seminars consist of a series of selected orthodontic topics
that will be assigned to individual residents for presentation to their
classmates and faculty. The course director will provide a seminal article
on the assigned topic from which the resident will research additional
references and present a seminar session based on the material.

PEDO 5028. Orthodontics 3. 1.5 Credit Hour.
These seminars consist of a series of selected orthodontic topics
that will be assigned to individual residents for presentation to their
classmates and faculty. The course director will provide a seminal article
on the assigned topic from which the resident will research additional
references and present a seminar session based on the material.

PEDO 5042. Pediatric Dentistry I. 2 Credit Hours.
This course comprises several seminar series and lectures on a variety
of subjects pertinent to advanced pediatric dentistry. Included are
conscious sedation, pulp therapy, traumatic dental injuries, cariology
and prevention, periodontal problems, special patient care, infection
control, restorative materials and techniques, radiographic principles and
practice, and pediatric grand rounds.

PEDO 5043. Pediatric Dentistry 2. 6 Credit Hours.
This course is largely a continuation of lectures and seminars on the
subject matter introduced in PEDO 5042 Pediatric Dentistry 1, but also
adds case conferences and current literature seminars.

PEDO 5044. Pediatric Dentistry 3. 6 Credit Hours.
In part, this is a continuation of some lecture and seminar topics from
PEDO 5043 Pediatric Dentistry 2. In addition, the following subject matter
will be presented: behavior management, psychosocial growth and
development, pediatric oral pathology, advanced nutrition, craniofacial
growth and development, antibiotics, and analgesics and sedatives.

PEDO 5051. Pediatric Physical Diagnosis. 1.5 Credit Hour.
The pediatric dental resident will be given the opportunity to learn
physical evaluation of a child’s various systems to determine the patient’s
status prior to administration of general anesthesia.

PEDO 6000. Introduction to Advanced Pediatric Dentistry for Interns. 1
Credit Hour.
This is a one year program during which the student intern participates in
similar curricular activities as the first year pediatric dentistry residents.
The student will attend didactic courses with the first year residents
and participate in presentations of journal articles in seminars. The
student will participate in weekly case presentations and interdisciplinary
dentistry seminars, as well as lectures by guest speakers in our
institution. Clinical activities will involved hands-on contact with patients
and working on pediatric patients under the supervision of pediatric
dentistry residents and faculty. The intern will be assigned their own
patients, and will attend clinic sessions with the pediatric dentistry
residents. Interns will rotate through our offsite clinics, providing
comprehensive dental care to pediatric patients.

PEDO 6023. Pediatric And Orthodontic Clinic 4. 7 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide
each resident with clinical experience that will enable him or her to
function as a proficient and competent provider of comprehensive
dental services for children. Throughout the two-year program, residents
will be expected to apply the information gained in the didactic part
of the program to the delivery of dental care in the various clinical
settings encompassed by the program. Although supervision by faculty
is always provided, residents are expected to demonstrate increasing
independence and initiative as they progress in clinical experience.

PEDO 6024. Pediatric and Orthodontic Clinic 5. 4.5 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide
each resident with clinical experience that will enable him or her to
function as a proficient and competent provider of comprehensive
dental services for children. Throughout the two-year program, residents
will be expected to apply the information gained in the didactic part
of the program to the delivery of dental care in the various clinical
settings encompassed by the program. Although supervision by faculty
is always provided, residents are expected to demonstrate increasing
independence and initiative as they progress in clinical experience.

PEDO 6025. Pediatric and Orthodontic Clinic 5. 7 Credit Hours.
The postdoctoral program in pediatric dentistry is designed to provide
each resident with clinical experience that will enable him or her to
function as a proficient and competent provider of comprehensive
dental services for children. Throughout the two-year program, residents
will be expected to apply the information gained in the didactic part
of the program to the delivery of dental care in the various clinical
settings encompassed by the program. Although supervision by faculty
is always provided, residents are expected to demonstrate increasing
independence and initiative as they progress in clinical experience.

PEDO 6029. Orthodontics 4. 2 Credit Hours.
These seminars consist of a series of selected orthodontic topics
that will be assigned to individual residents for presentation to their
classmates and faculty. The course director will provide a seminal article
on the assigned topic from which the resident will research additional
references and present a seminar session based on the material.

PEDO 6030. Orthodontics 5. 2 Credit Hours.
These seminars consist of a series of selected orthodontic topics
that will be assigned to individual residents for presentation to their
classmates and faculty. The course director will provide a seminal article
on the assigned topic from which the resident will research additional
references and present a seminar session based on the material.

PEDO 6045. Pediatric Dentistry 4. 6 Credit Hours.
A continuation of the case conferences, current literature seminars, and
pediatric grand rounds, this course also introduces practice management
and topics in clinical genetics.

PEDO 6083. Investigative Project. 1 Credit Hour.
Each resident is required to carry out an investigative project that may be
laboratory-, clinic-, or library-based, depending on the interests of
the student. Projects must be submitted in the form of a manuscript or
publishable quality.

PEDO 6084. Investigative Project. 1 Credit Hour.
Each resident is required to carry out an investigative project that may be
laboratory-, clinic-, or library-based, depending on the interests of
the student. Projects must be submitted in the form of a manuscript or
publishable quality.
PEDO 6146. Pediatric Dentistry 5. 5 Credit Hours.
This course continues the case conferences, current literature seminars, and pediatric grand rounds of PEDO 6045 Pediatric Dentistry 4, adding craniofacial anomalies seminars.

PEDO 7091. Pediatric Dentistry Clinic. 2 Credit Hours.
Clinical experience with child patients gives students the opportunity to gain clinical judgement and proficiency while practicing comprehensive dentistry for children. Areas of competency include prevention, examination, diagnosis and treatment planning, local anesthesia, operative dentistry, pulpal therapy, oral injuries, oral surgery, preventive and interceptive orthodontics, behavior management, maintenance care, and periodontics.

Courses

PERI 5010. Clinical Periodontics 1. 1-10 Credit Hours.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.

PERI 5011. Clinical Periodontics 1. 1 Credit Hour.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.

PERI 5012. Clinical Periodontics 1. 1 Credit Hour.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.

PERI 5025. Case Presentation Seminar. 0.5 Credit Hours.
The course consists of presentation of clinical cases. Students have the opportunity to prepare to defend their approaches to therapy and gain experience in oral presentation of cases.

PERI 5031. Periodontics Lecture Series. 2 Credit Hours.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed.

PERI 5035. Peri Lecture Series. 1 Credit Hour.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed. Cross-listed/Concurrent: PERI 6030/6031.

PERI 5037. Bone & Connective Tissue Biology. 0.5 Credit Hours.
This course seeks to apply current principles of bone and periodontal ligament cell biology to our understanding of the development, maintenance, and repair of periodontal tissues and to the clinical management of pathology at the tooth supporting structures. Emphasis is placed on the basic cell and structural biology which provides the underlying rationale for current and experimental approaches to periodontal disease and therapies.

PERI 5052. Surgical Anatomy. 1 Credit Hour.
This course emphasizes the learning of the head and neck anatomy that is related directly to surgical procedures performed by periodontists and endodontists and the practice of prosthodontic dentistry. Anatomic structures related to implant placement receive special emphasis. Surgical complications related to anatomy are described. A prosection on human cadavers is presented with a strong emphasis on surgical anatomy.

PERI 5073. Literature Seminars. 1 Credit Hour.
This course is designed to familiarize the student with the historical and contemporary literature related to periodontics. The first-year course is concerned mainly with basic science literature while second- and third-year courses concentrate on the clinical literature. Students have the opportunity to evaluate the data in the literature, critique experimental design, abstract articles, critically evaluate research findings, and learn to use library resources.

PERI 5074. Current Lit Seminar. 1-5 Credit Hours.
Current periodontal literature published during the academic year is discussed in a seminar format.

PERI 5075. Mock Boards. 0.5 Credit Hours.
This course is a simulation of the exams given by the American Board of Periodontology. Students present their cases orally, with slides, to faculty examiners and take an oral examination.

PERI 5097. Research. 1-9 Credit Hours.
This course consists of independent, original research under the direction of a faculty member.

PERI 6000. Introduction to Advanced Periodontics for Interns. 1 Credit Hour.

PERI 6001. Periodontic Practice Management. 0.5 Credit Hours.
The objective of this course is to prepare the student for the business aspects of clinical practice. The student will be exposed to the banking finances, practical aspects of office management, matters relating to dental insurance, and the different types of practice.

PERI 6009. Clinical Periodontics 2. 2 Credit Hours.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases and interdisciplinary cases.

PERI 6011. Clinical Periodontics 2. 3 Credit Hours.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.

PERI 6012. Clinical Periodontics 3. 4.5 Credit Hours.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.

PERI 6016. Clinical Periodontics 3. 2 Credit Hours.
Students have the opportunity to gain clinical experience as they treat patients in the postdoctoral clinic. Cases gradually increase in complexity and severity and include treatment of the medically compromised patient, implant cases, and interdisciplinary cases.
PERI 6020. Emergency Care Seminar. 0.5 Credit Hours.
This is a pragmatic course to familiarize the student with the medical emergencies that the clinician may incur while practicing dentistry. Major texts on the medically compromised patient are used as a guideline. The course is given in seminar format.

PERI 6025. Case Presentation Seminar. 0.5 Credit Hours.
The course consists of presentation of clinical cases. Students have the opportunity to prepare to defend their approaches to therapy and gain experience in oral presentation of cases.

PERI 6030. Periodontic Lecture Series. 2 Credit Hours.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed.

PERI 6031. Periodontic Lecture Series. 2 Credit Hours.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed.

PERI 6033. Peri Lecture Series. 1 Credit Hour.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed. Concurrent: PERI 5031 and PERI 6031.

PERI 6036. Peri Lecture Series. 1 Credit Hour.
This course is designed to instruct the student in all aspects of periodontology. It is meant to be an adjunct to the PERI 6073 Literature Seminar. Topics dealing with basic science, pathobiology, and clinical and surgical aspects of periodontal disease will be discussed. Concurrent: PERI 5031 and PERI 6031.

PERI 6050. Periodontal Medicine. 1 Credit Hour.
This course is designed to establish the principles essential for problem-oriented evaluation of the dental patient. The intent is to discuss the diagnosis of selected common orally related primary and secondary mucocutaneous conditions and oral cancer and their management.

PERI 6070. Supervised Teaching. 0.5 Credit Hours.
Graduate students are assigned to the various clinics and classes for the opportunity to acquire experience in teaching pre-doctoral students and faculty members in a variety of situations. Supervision and evaluation of teaching performance are provided by the graduate faculty.

PERI 6071. Supervised Teaching. 0.5 Credit Hours.
Graduate students are assigned to the various clinics and classes for the opportunity to acquire experience in teaching pre-doctoral students and faculty members in a variety of situations. Supervision and evaluation of teaching performance are provided by the graduate faculty.

PERI 6072. Supervised Teaching. 0.5 Credit Hours.
Graduate students are assigned to the various clinics, laboratories, and classes for the opportunity to acquire experience in teaching undergraduate students in a variety of situations. Supervision and evaluation of teaching performance are provided by the graduate faculty.

PERI 6073. Literature Seminars. 1 Credit Hour.
This course is designed to familiarize the student with the historical and contemporary literature related to periodontics. The first-year course is concerned mainly with basic science literature while second- and third-year courses concentrate on the clinical literature. Students have the opportunity to evaluate the data in the literature, critique experimental design, abstract articles, critically evaluate research findings, and learn to use library resources.

PERI 6074. Current Lit Seminar. 0.5-5 Credit Hours.
Current periodontal literature published during the academic year is discussed in a seminar format.

PERI 6075. Mock Boards. 0.5 Credit Hours.
This course is a simulation of the exams given by the American Board of Periodontology. Students present their cases orally, with slides, to faculty examiners and take an oral examination.

PERI 6097. Research. 1-9 Credit Hours.
This course consists of independent, original research under the direction of a faculty advisor.

PERI 6098. Thesis. 1-9 Credit Hours.
Completion of an acceptable thesis is required for the Master of Science degree. Registration in this course for at least one semester is required of all degree candidates. Prerequisites: admission to candidacy for the Master of Science degree.

PERI 7059. Implantology. 1 Credit Hour.
Through lecture sessions, this introductory course offers students an opportunity to obtain both background and knowledge regarding accepted dental implant systems.

PERI 7081. Periodontics. 1.5 Credit Hour.
This course is an expansion of the foundation presented in the sophomore year. Surgical treatment planning, rationale, techniques, and wound healing are emphasized. A three-hour surgical laboratory exercise is included. Periodontal interrelationships with prosthodontics, endodontics, and orthodontics are examined in case presentation formats with student participation.

PERI 8015. Periodontics. 0.5 Credit Hours.
This lecture course is a comprehensive review of current periodontal topics. Topics include those that should be employed in the diagnosis, treatment planning, and management of periodontal diseases in a general dentistry practice setting. Both non-surgical and surgical treatment approaches will be discussed.

PERI 9097. Research. 4 Credit Hours.
The student develops a research protocol and background literature search for a clinical, laboratory, or animal model research project.

Courses

PHAR 4000. Special Topic. 1-42 Credit Hours.
This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

PHAR 4003. Clinical Pharmacology. 4 Credit Hours.
This selective is an essential course in Drug Prescribing and Therapeutics for future interns in any specialty. It is an excellent opportunity to brush up on drug therapy before entering residency and to avoid causing harm to the patients through mis-prescription of drugs. The drugs of the major therapeutic areas and how they are used are reviewed by specialists from the Departments of Medicine, Psychiatry, Surgery, and Pharmacology. Particular emphasis is placed on the use of drugs in clinical scenarios.
PHAR 5013. Principles Of Pharmacology & Physiology 1. 3 Credit Hours.
Topics include principles of drug action; receptor classification and quantitation; dose response relationships; cellular mechanisms of drug action; fundamental concepts of drug receptor interactions; voltage gated and ion channels; drug actions mediated by transduction and non-transduction enzymes; time course of drug action; absorption, distribution, biotransformation and elimination of drugs; pharmacokinetics; and experimental approaches to drug action.

PHAR 5014. Integrative Physiology & Therapeutics. 4.5 Credit Hours.
This course provides students with a base of knowledge in physiology and pharmacology taking an integrative approach to understanding experimental and clinical therapeutics. Primary focus will be on understanding normal physiologic functions, cellular mechanism underlying disease, and systematic consideration of the pharmacology, clinical applications, and toxicities of the major classes of drugs. This required 4.5 credit hour course for Pharmacology and Physiology students is comprised of three sections, each covering major areas of physiology and pharmacology along with their corresponding therapeutics. The three sections include: 1) autonomic nervous system control and therapeutics, 2) cardiovascular, renal and respiratory physiology and therapeutics, and 3) metabolism, hormones, GI physiology and therapeutics. Each section is to be offered separately as an independent micro-elective for students from other programs within the Graduate School of Biomedical Science. Prerequisites: IBMS 5000 and PHAR 5013.

PHAR 5018. Cardiovascular, Renal and Respiratory Physiology and Therapeutics. 2 Credit Hours.
This course covers the anatomy, physiology and pharmacology of the heart, the blood vessels, kidneys, and airways and lungs. Specific areas include: 1) normal physiology of the cardiovascular system and mechanisms underlying its major pathologies such as atherosclerosis, hypertension, heart failure and stroke, as well as the major classes of drugs (antihypertensives, anti-lipemics, anti-anginals, and anticoagulants) to treat these primary cardiovascular disorders. 2) importance of the kidneys in maintaining body electrolyte and water balance, and examples of cardiovascular and kidney diseases that are targets for important therapeutic drugs such as the diuretics and ACE inhibitors. 3) respiratory physiology and drugs used in the treatment of asthma and chronic obstructive pulmonary disease. Prerequisites: IBMS 5000 or equivalent.

PHAR 5019. Metabolism, Hormones, GI Physiology and Therapeutics. 2 Credit Hours.
This course provides an overview of the following: 1) physiology of major endocrine systems, including pituitary, thyroid, GI and renal hormones, etc. It covers endocrine regulation of stress, blood sugar, male and female fertility, calcium balance, growth, pregnancy, and appetite. Pharmacological approaches to management of diseases caused by defects in metabolism (e.g. diabetes) and hormonal regulation (e.g. thyroid disorders), as well as sex steroids and adrenal steroids, will be discussed. 2) mechanisms and regulation of digestion/acid secretion and nutrient absorption by the GI tract along with pharmacological management of GI diseases, including GERD, peptic ulcer, etc. Prerequisites: IBMS 5000 or equivalent.

PHAR 5020. Basics Of Research Design. 2 Credit Hours.
This course aims at teaching first-year graduate students fundamentals of research design and analysis of scientific literature to orient them with setting up scientific experiments and writing grant proposals. The course is divided into three sections: research design, communicating scientific data, and getting scientific ideas funded.

PHAR 5021. Autonomic Control & Therapeutics. 0.5 Credit Hours.
This course covers basic anatomy, physiology and pharmacology of the autonomic nervous system, including its higher order CNS components of the ANS in the regulation of homeostasis. Diseases that involve alterations in ANS function and drugs that modulate catecholaminergic and cholinergic neuro-effector transmission will be discussed.

PHAR 5023. Drug Discovery and Development. 2.5 Credit Hours.
Drug Discovery and Development is a 2.5 credit hour course that provide students with an understanding of the overall process of drug discovery and development. It covers the basic principles of how new drugs are discovered, how drugs interact with their biological targets, and application of medicinal chemistry in lead optimization. Focused lectures on specific therapeutic areas will include drug development for cancer, diabetes, pain, and psychiatric disorders. Patenting, phase 1, 2 and 3 clinical trials, and marketing processes will be covered, as will contract opportunities for basic science researchers with drug companies. Case studies of both successful and unsuccessful drug candidates will be presented, where students will learn about the entire drug discovery and development process. Upon successful completion of this course, students will have a comprehensive knowledge of the fundamental principles of drug discovery and development, though to successful implementation of the new drug in the clinic. Prerequisite: IBMS 5000 or at the discretion of the course directors.

PHAR 5090. Seminar. 1-9 Credit Hours.
This course consists of presentation and discussion of recent advances in research by staff faculty, students, and outside scientists. A monthly journal club that emphasizes student presentations of current primary literature is also a component.

PHAR 5091. Special Topics: Microelectives. 0.5-9 Credit Hours.
Micro-electives are courses that can be of any type (tutorial or original literature review, short [2-week] didactic, technique, etc.). In general, since they are short, they are often offered at any time of convenience between the student(s) and the faculty. Various topics include but not limited to: (1) New Views on Monoaminergic Neurotransmission: Are Transporters Important?; (2) Drug Discovery: Nuts and Bolts; (3) Historical Perspectives of Receptor Theory; (4) Cell Membrane Microdomains and Signaling; (5) Neuropeptide Metabolism; (6) Serotonin: From Soup (Transmission) to Nuts (Behavior); (7) Central-Cardio-Respiratory Systems; (8) Neural Substrates of Regulatory Behaviors: Peptides and Monoamines; (9) Current Issues in Basic Research on Mechanisms of Epilepsy; (10) Appetite Control: Adipose Hormones and Neuropeptides; (11)Fundamentals of Behavioral Pharmacology; (12) Therapeutics: Autonomic Pharmacology; (13) Therapeutics: Cardiovascular-Renal Pharmacology (Prerequisite - PHAR 5091.012); (14) Therapeutics: Central Nervous System Pharmacotherapeutics; (15) Therapeutics: Chemotherapy; (16) Therapeutics: Endocrine Pharmacology; (17) Therapeutics: Pharmacological Management of Pain; and (18) G protein-coupled receptor heteromers.

PHAR 5092. Special Problems In Pharmacology: Research Practicum. 1-9 Credit Hours.
This is a full-semester research experience for the principal investigator to evaluate if a student demonstrates the potential for productive and independent investigation during the summer following the first year. The course concludes with a 15 minute oral presentation given by the student and a written report in a journal style.
PHAR 6005. Drugs in Society. 3 Credit Hours.
This course will provide an overview of the basic neuropharmacology, preclinical pharmacology, epidemiology, as well as legal and social issues associated with alcohol and the major classes of abused drugs. The course will be team taught by several faculty members from the Departments of Pharmacology, Physiology, and Psychiatry. The format will include lectures, videos, and group discussion. The major drug classes that will be discussed include the following: 1) alcohol, benzodiazepines, and barbiturates; 2) nicotine (tobacco and other delivery systems); 3) marijuana and other cannabinoids; 4) opioids; 5) stimulant drugs including cathinones; 6) ketamine and related drugs; 7) hallucinogens; and 8) dietary supplements and over the counter medications. Readings will include scientific original and review articles, selected chapters in books (e.g., Drugs, Society, and Human Behavior, McGraw-Hill), as well as blogs and recent government and news agency publications as they become available and are relevant.

PHAR 6015. Effects, Power, Meta-Analysis. 1 Credit Hour.
Evaluating the statistical significance of research findings requires knowledge of statistics, but additional skills are needed to evaluate their importance. This course introduces tools that help answer three questions: 1) How do I assess the practical or everyday significance of my research results, 2) Does my study have sufficient power to find what I am seeking, and 3) How do I draw conclusions from past studies reporting disparate results. Answering these questions involves estimation of effect size, calculation of statistical power, and pooling of individual effect size estimates by meta-analysis. This course discusses these activities together, because they are interrelated. A well-designed study is normally based on a prospective power analysis, and a good power analysis will ideally be based on a meta-analytically derived mean effect size. There is a growing recognition by scientific journals and funding agencies of the need to report effect sizes along with the results of test of statistical significance and to quantify the statistical power of studies. The aim of this course is to help acquire the skills necessary to meet these needs. This micro-elective builds on the significance-testing and power analytic skills that students learn in CSAT 5095 Experimental Design and Data Analysis. Thus, having taken CSAT 5095 is a prerequisite for this course.

PHAR 6020. Molecular & Pharmacological Basis Of Therapeutics. 3 Credit Hours.
This course provides the graduate student with current knowledge of how genetic variants can affect drug response and the potential to optimize drug therapy. Course format will include lectures, discussion of selected literature, individual student presentations, and the opportunity for the development of a mini pharmacogenetic/genomic protocol and consent form to address a clinical/biomedical question mutually agreed upon between course director and students.

PHAR 6025. Molecular Pharmacology. 2 Credit Hours.
This course will be presented in a journal club/paper discussion format and will focus on the molecular aspects of pharmacology, with emphasis on molecular biology, biochemistry, and cell biology of a variety of physiological systems subjected to pharmacological manipulation. The topics to be discussed will include molecular mechanisms of drug action, signal transduction and regulation, molecular approaches, and recent advances in areas of molecular pharmacology.

PHAR 6027. Fundamentals Of Neuroethics. 1 Credit Hour.
Recent advances in neuroscience have considerably improved our understanding of brain function. However, the fascinating examination of brain's mysteries often intersects with the concerns of ethics and public policy. This course aims at presenting and discussing philosophical and scientific perspectives on major bioethical issues pertinent to neuroscience research. Several subjects will be covered in the course, including the effects of pharmacological and surgical interventions on the brain/min binomial, therapy versus enhancement, brain imaging and mental privacy, neurobiology of decision making, consciousness, unconsciousness, and death.

PHAR 6071. Supervised Teaching. 1-9 Credit Hours.
This course provides a mentored teaching experience. The student will be responsible for directing an undergraduate Physiology laboratory course under the guidance of the Physiology faculty. The student will prepare and provide limited lectures addressing background information required to understanding and performing research laboratories, as well as direct undergraduates in performance of these laboratories. Physiology faculty will insure that graduate students are prepared and knowledgeable about the laboratories they will direct. In addition, students will receive training in general pedagogy and specifically, in the performance, conduct, and directing of physiology research and its dissemination. In addition to learning to direct a laboratory course and providing lecture-based information, graduate students will be trained in preparing, administering, and marking laboratory exams.

PHAR 6097. Research. 0.5-12 Credit Hours.
Independent, original research under the direction of a faculty advisor.

PHAR 6098. Thesis. 1-12 Credit Hours.
Registration for at least one term is a Graduate School requirement for all MS candidates.

PHAR 7002. Bridging The Gap From Bench To Bedside: Pharmacology Clinical Practicum. 1 Credit Hour.
Pharmacology is the most basic of the science disciplines to bridge the gap between "bench and bedside." This micro-elective will provide students with focused exposure to therapeutics and clinical practice. The course will incorporate case-based, operating room scenarios using human simulator mannequins, with a clinical experience in association with the Department of Anesthesiology. Students must directly contact the course director before registering for this course.

PHAR 7003. Electrophysiology In Neuroscience Research. 1 Credit Hour.
The purpose of this course is to explore the rationale underlying the use of electrophysiological techniques in neuroscience research. Rather than focusing on the technical aspects of electrophysiology, this course will discuss current hot topic manuscripts that utilize different electrophysiological approaches including in vivo (anesthetized and conscious), in vitro, extracellular (single-unit and field potential), intracellular and patch. It is anticipated that at the end of the course students will be more familiar with the area of electrophysiology and able to understand why particular approaches are utilized in neuroscience research and be able to critically review electrophysiological data from manuscripts.

PHAR 7099. Dissertation. 1-12 Credit Hours.
Registration for at least two terms is a Graduate School requirement for all Ph.D. candidates. Prerequisites: admission to candidacy for Doctor of Philosophy degree.
PHAR 8009. Pharmacotherapeutics. 2 Credit Hours.
The emphasis of this course is on understanding the rationale, indications, and contraindications for prescribing pharmacologic agents in dentistry. Consideration of the pharmacologic agents that the patient may be taking at the time of the dental visit is emphasized.

Courses

PHYL 3014. Research in Endocrinology of Aging. 0 Credit Hours.
The course consists of student participation in research on glucocorticoid-induced gene expression during aging and food restriction.

PHYL 3016. Ion Channel Research. 0 Credit Hours.
The course includes student participation in ongoing basic research on the molecular mechanisms of signaling pathways acting on ion channels. Techniques may include patch-clamp, electrophysiology, molecular biology and biochemistry.

PHYL 4000. Special Topic. 1-42 Credit Hours.
This is a self-designed course created by both the student and the department to cover a specific topic. A Course Approval Form must be completed along with documentation of the designed course description.

PHYL 4012. Molecular Endocrinology Research. 4 Credit Hours.
The course consists of student participation in research on glucocorticoid-induced gene expression during aging and food restriction.

PHYL 4016. Ion Channel Research. 4 Credit Hours.
The course includes student participation in ongoing basic research on the molecular mechanisms of signaling pathways acting on ion channels. Techniques may include patch-clamp, electrophysiology, molecular biology and biochemistry.

PHYL 5017. Discovery Of Physiological Principles 3. 2 Credit Hours.
This course consists of laboratory demonstrations and experiments in areas covered in Organ Systems Physiology 2 and acquisition of skills for analyzing and communicating the results of laboratory research. Corequisites: PHYL 5025.

PHYL 5025. Organ Systems Physiology 2. 4 Credit Hours.
This course is a continuation of the study, begun in Organ System Physiology 1, of the mechanisms that produce and control the functions of the body's organ system. Prerequisites: PHYL 5011, PHYL 5014, PHYL 5021, and PHYL 5024.

PHYL 5028. Fundamentals of Physiology. 2 Credit Hours.
Fundamentals of Physiology is a 2 credit hour course designed to provide students with a basic understanding of mammalian physiology. Students will be exposed to overarching concepts and contemporary perspectives regarding the normal function (physiology) of the organs and systems of organs of the human body. Lectures will focus on fundamental functions of the cardiovascular, renal, respiratory, gastrointestinal and endocrine systems. This course aims to blend targeted student learning outcomes with critical thinking skills to enhance student understanding of integrative systems biology as an aid to success in the field of biomedical research. Upon successful completion of this course, students will have knowledge of physiological principles of individual organs and systems and a basic appreciation for how interactions between these systems integrate to subserve healthy function. This course is centered on the principle that doctoral students must take personal responsibility for their own learning. As an upper level course, all lectures will be interactive. Lectures will be built around assigned readings. Therefore, each student will be expected to actively engage with faculty and fellow students during lectures to facilitate and enhance the learning experience. Prerequisite: IBMS 5000 or at the discretion of the course directors.

PHYL 5030. Biology of Pain. 2 Credit Hours.
Biology of Pain is a 2.0 credit hour course that provide students with fundamentals of sensory transduction and pathways for pain. It covers the basic principles of how sensory neurons are regulated at the periphery as well as centrally, how pain is perceived in the brain and different therapeutic options of pain management. This course will be divided into specific lectures focused on neuronal and non-neuronal involvement, peripheral and central pathways of pain, assessment, pharmacology and treatment of pain as well as several important clinical states causing pain in various diseased conditions. Upon successful completion of this course, students will have a comprehensive knowledge of the core principles of physiology, basic biology and pharmacology of pain. Prerequisites: IBMS 5000 or at the discretion of the course directors.

PHYL 5041. Excitable Membranes. 1 Credit Hour.
This course addresses fundamental mechanisms of cell excitability in neurons and other excitable tissues. The format is a combination of lectures, readings, discussions, a laboratory demonstration, and online simulations (where available). Examples of the latter include activities to simulate the resting membrane potential and action potentials. The module will emphasize contemporary issues in the scientific literature as well as translational science where dysfunction in ion channels underlie common disorders such as Alzheimer's Disease, Myasthenia Gravis, Cystic Fibrosis, Long QT Syndrome, and Epilepsy to name just a few. PHYL 5041 is a co-requisite for Fundamentals of Neuroscience I as it is the first module of that course, but it also can be taken as a standalone one-hour course.

PHYL 5042. Cardiovascular Physiology. 1 Credit Hour.
This course explores the physiological mechanisms by which the cardiovascular system carries out its principle function. Mechanisms that produce and regulate cardiac pumping, organ blood flow, capillary fluid and solute exchange, and arterial blood pressure are examined. The nature and importance of various local, neural, and hormonal mechanisms are emphasized. Integrated control of cardiovascular function in situations requiring cardiovascular adjustments (e.g., exercise, blood pressure alterations) are also covered. Students may take the full series but are only required to take three out of the four courses (PHYL 5041, 5042, 5043, and 5044).

PHYL 5043. Respiratory & Renal Physiology. 1 Credit Hour.
This course covers the physiology of respiratory and renal function in the human body. Our focus is on basic mechanisms of function, role in body homeostasis, as well as dysfunction of both systems associated with pulmonary and renal disease. Two sessions are set aside for discussion around significant advances in each field. One or more recently published articles will serve as the focus for each of these discussions sessions. Students may take the full series but are only required to take three out of the four courses (PHYL 5041, 5042, 5043, and 5044).

PHYL 5044. Metabolism/Hormones/GI System. 1 Credit Hour.
The course serves to expose students to the current state of knowledge in the field of endocrinology and metabolism, including reproductive physiology, and the related topics of the physiology of the digestive tract. Three sessions are assigned to advanced topics. In these three sessions students will engage in a discussion format centered around one recent important publication. The lecturer will lead the discussion with the aim of showing how the topics the students have been exposed to integrate one with another, providing the context for present-day discoveries.
PHYL 5045. Mammalian Physiology. 4 Credit Hours.
The course begins with fundamental processes that govern membrane transport, membrane potential, and excitation-contraction coupling. The course then proceeds to coverage of organ system function including cardiovascular, respiratory, renal, gastrointestinal and endocrine/metabolic physiology. Lecture material is enhanced by supplemental discussion of research literature encompassing molecular biology, integrative function, and pathophysiological implications. Students may take the full course but are only required to take three out of the four modules (PHYL 5041, 5042, 5043, and 5044).

PHYL 6020. Regulation of Glucose Metabolism. 3 Credit Hours.
The normal regulation of glucose metabolism will be reviewed integrating whole body, organ, cellular, and molecular control mechanisms. Dysregulation of these control mechanisms in diabetes and other common metabolic disorders such as obesity and the metabolic syndrome will be examined in detail. State-of-the-art in vivo and in vitro techniques essential for the study of normal and deranged glucose homeostasis will be discussed in depth. Diabetic microvascular (nephropathy, retinopathy, neuropathy) and macrovascular complications and their relationship to impaired glucose metabolism will be reviewed. Lastly, pharmacologic therapy of diabetes and its associated complications will be discussed.

PHYL 6071. Supervised Teaching. 1 Credit Hour.
A student enrolled in this course is expected to participate in the teaching program of the Department.

PHYL 6090. Seminar. 1 Credit Hour.
The course is comprised of research presentations by Physiology graduate students. This course is required of all students each semester.

PHYL 6091. Selected Topics of Physiology. 2 Credit Hours.
Students must take at least two courses selected from among the offerings in: (1) Cardiovascular; (2) Cell Biology in Neural Science; (3) Endocrine and Metabolism; (4) Molecular Physiology; and (5) Ion Channels in Disease. Courses that may be substituted for one of these selections: (1) INTD 5040 - Fundamentals of Neuroscience I: Molecular, Cellular, and Developmental Neuroscience; (2) INTD 5043 - Fundamentals of Neuroscience II: Systems Neuroscience; (3) CSBL 6048 - Biology of Aging; and (4) CSBL 6058 - Neurobiology of Aging. Not all selected topics are offered each semester. Please discuss this with the Academic Coordinator for more details. Substituted courses in conflict with Physiology course schedule will require approval from COGS.

PHYL 6097. Research. 1-12 Credit Hours.
If a track chooses to give a seminar course, the specific course requirements will be determined by the track. The sub-designations for each track are: (1) Biology of Aging; (2) Cancer Biology; (3) Cell & Molecular Biology; (4) Genetics, Genomics & Development; (5) Membrane Biology & Cell Signaling; (6) Metabolism & Metabolic Disorders; (7) Microbiology & Immunology; (8) Molecular Biophysics & Biochemistry; (9) Molecular, Cellular, & Integrative Physiology; (10) Neuroscience; and (11) Pharmacology.

PHYL 6098. Thesis. 1-12 Credit Hours.
Registration for at least one term is required of M.S. candidates. Prerequisite: admission to candidacy for Master of Science degree.

PHYL 6291. Seminar 2. 1 Credit Hour.
Presentation and discussion of recent research advances by outside scientists.

PHYL 7099. Dissertation. 1-12 Credit Hours.
Registration for at least two terms is required of Ph.D. candidates. Prerequisites: admission to candidacy for the Ph.D. degree.

Courses

PROS 5015. Concepts of Occlusion. 1 Credit Hour.
Various concepts of occlusion with special emphasis on the clinical application of gnathology are the focus of this course. The laboratory phase includes the development of a functional occlusion through the cusp-fosa additive wax method and an occlusal equilibration technique.

PROS 5021. Advanced Prosthodontics 1. 1 Credit Hour.
This fall course for first-year advanced prosthodontics students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontics care.

PROS 5022. Advanced Prosthodontics 1. 1 Credit Hour.
This spring course for first-year advanced prosthodontics students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontics care.

PROS 5032. Clinical Prosthodontics 1. 4 Credit Hours.
This fall course for first-year advanced prosthodontics students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a first course in a progressively more complex clinical prosthodontics curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontics practice involving fixed, removable, and implant treatment procedures.

PROS 5033. Clinical Prosthodontics I. 3 Credit Hours.
This spring course for first-year advanced prosthodontics students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a second course in a progressively complex clinical prosthodontics curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontics practice involving fixed, removable, and implant treatment procedures.

PROS 5044. OMS/Prosthodontics Seminar 1. 0.5 Credit Hours.
This fall course for first-year prosthodontics students is a seminar devoted to the discussion and coordination of treatment of patients under joint management by Oral & Maxillofacial Surgery and Graduate Prosthodontics.

PROS 5045. OMS/Prosthodontics Seminar 1. 0.5 Credit Hours.
The spring course for first-year prosthodontics students is a seminar devoted to the discussion and coordination of treatment of patients under joint management by Oral & Maxillofacial Surgery and Graduate Prosthodontics.

PROS 5049. Overview of Maxillofacial Pros. 0.5 Credit Hours.
This course introduces the graduate student to the discipline of maxillofacial prosthetics. Emphasis is placed on treating patients requiring prosthetic devices for the head and neck area due to surgery or trauma.

PROS 5050. Dental Implantology. 1 Credit Hour.
This course offers graduate level students an introduction to the basics of the osseointegrated implant surgical and prosthetic technique. Lectures on advanced concepts of osseointegration therapy related to several implant systems are included.

PROS 5053. Advanced Implant Prosthodontics. 1.5 Credit Hour.
The objective of this course is to offer each student an opportunity to obtain background information, knowledge, and skills associated with dental implant treatment modalities.

PROS 5067. Supervised Teaching 1. 1.5 Credit Hour.
This course provides first-year prosthodontic residents the opportunity to teach complete denture laboratory skills to predoctoral students under the supervision of experienced prosthodontic educators.
PROS 5068. Supervised Teaching 1. 2 Credit Hours.
This spring course provides first-year prosthodontic residents the opportunity to teach complete denture laboratory skills to predoctoral students under the supervision of experienced prosthodontic educators.

PROS 5072. Literature Review Seminar 1. 1 Credit Hour.
This fall course for first-year prosthodontics students is the first of six courses given in a three-year continuum of classical literature review seminars. The broad field of prosthodontics literature is systematically reviewed with the objective of providing the postdoctoral student with a background of prostodontic knowledge and history.

PROS 5073. Literature Review Seminar 1. 1 Credit Hour.
This spring course for first-year prosthodontic students is the second of six courses given in a three-year continuum of classical literature review seminars. The broad field of prosthodontics literature is systematically reviewed with the objective of providing the postdoctoral student with a background of prostodontic knowledge and history.

PROS 5095. Research. 1 Credit Hour.
This summer course for advanced prosthodontics students is the first of three in the first year designed to offer opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper by certificate students suitable for publication in a peer-rated journal. Students in the masters programs will be expected to collect and analyze data for a thesis that must be defended as the culmination of research efforts.

PROS 5096. Research. 1 Credit Hour.
This summer course for advanced prosthodontics students is the second of three in the first year designed to offer opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper by certificate students suitable for publication in a peer-rated journal. Students in the master's degree programs will be expected to collect and analyze data for a thesis that must be defended as the culmination of research efforts.

PROS 5097. Research 1. 1-9 Credit Hours.
This course offers the student an opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper by certificate students suitable for publication in a peer-rated journal. Students in the master's programs will be expected to collect and analyze data for a thesis which must be defended as the culmination of research efforts.

PROS 6000. Introduction to Advanced Prosthodontics for Interns. 1 Credit Hour.

PROS 6022. Advanced Prosthodontics 2. 1 Credit Hour.
This fall continuation course for second-year advanced prosthodontic students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontic care.

PROS 6023. Advanced Prosthodontics 2. 1 Credit Hour.
This spring continuation course for second-year advanced prosthodontics students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontic care.

PROS 6031. Clinical Prosthodontics 2. 4.5 Credit Hours.
This fall course for second-year advanced prosthodontic students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a third clinical course in a progressively complex clinical prosthodontic curriculum. Each student will have opportunity to maintain a comprehensive prosthodontic practice involving fixed, removable, and implant treatment procedures (including surgical placement of implants).

PROS 6032. Clinical Prosthodontics 2. 4.5 Credit Hours.
This spring course for advanced prosthodontics students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a course in a progressively more complex clinical prosthodontic curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontic practice involving fixed, removable, implant and maxillofacial prosthodontic patients.

PROS 6033. Clinical Prosthodontics 3. 8 Credit Hours.
This fall course for advanced prosthodontic students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics in a progressively more complex clinical prosthodontics curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontics practice involving fixed, removable, implant and maxillofacial prosthodontics patients.

PROS 6034. Clinical Prosthodontics 3. 6.5 Credit Hours.
This spring course for advanced prosthodontics students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics in a progressively more complex clinical prosthodontics curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontics practice involving fixed, removable, implant, and maxillofacial prosthodontics.

PROS 6035. Maxillofacial Prosthodontics. 1 Credit Hour.
This clinical course provides the opportunity to experience treating patients on the Maxillofacial Prosthetics Service. Patients with congenital and acquired defects are treated under the supervision of the maxillofacial prosthodontics faculty.

PROS 6037. Clinical Prosthodontics. 2 Credit Hours.
This clinical course for Perio-Pros residents in their 3rd and 5th years is designed to provide complex clinical treatment experiences that integrate skills from both specialties. Each student will have the opportunity to maintain a comprehensive integrated Perio-Pros practice.

PROS 6043. Geriatric Dentistry. 0.5 Credit Hours.
The objective of this course is to provide the clinical and didactic background necessary to address the limitations geriatric patients pose for prosthodontic specialty level diagnosis, planning and treatment.

PROS 6046. OMS/Prosthodontics Seminar 2. 0.5 Credit Hours.
This fall semester course for second-year advanced prosthodontic students is the third in a continuum of seminar courses devoted to the discussion and coordination of treatments of patients under joint management of the Oral and Maxillofacial Surgery and Prosthodontics programs.

PROS 6047. OMS/Prosthodontics Seminar 2. 0.5 Credit Hours.
This spring semester course for second-year advanced prosthodontics students is the fourth in a continuum of seminar courses devoted to the discussion and coordination of treatments of patients under joint management of the Oral and Maxillofacial Surgery and Prosthodontics programs.
PROS 6048. Oral & Maxillofacial Surgery and Prosthodontics Seminar 3. 0.5 Credit Hours.
This fall semester course for third year advanced prosthodontics students is a continuation of seminar courses devoted to the discussion and coordination of treatments of patients under joint management of the Oral & Maxillofacial Surgery and Prosthodontics programs.

PROS 6049. Oral & Maxillofacial Surgery and Prosthodontics Seminar 3. 0.5 Credit Hours.
This spring semester course for third year advanced prosthodontics students is a continuation of seminar courses devoted to the discussion and coordination of treatments of patients under joint management of the Oral & Maxillofacial Surgery and Prosthodontics programs.

PROS 6069. Supervised Teaching 2. 2 Credit Hours.
This fall course is the first of two second-year advanced prosthodontics courses that provide students with the opportunity to teach fixed prosthodontic laboratory skills to predoctoral students under the supervision of experienced prosthodontic educators.

PROS 6070. Supervised Teaching 2. 2 Credit Hours.
This spring course is the second of two second-year advanced prosthodontics courses that provide students with the opportunity to teach fixed prosthodontic laboratory skills to predoctoral students under the supervision of experienced prosthodontic educators.

PROS 6071. Supervised Teaching 3. 2 Credit Hours.
This course is the first of two third-year advanced prosthodontics courses that provide students with the opportunity to teach prosthodontic clinical skills to predoctoral students under the supervision of experienced prosthodontic educators.

PROS 6072. Supervised Teaching 3. 2 Credit Hours.
This course is the second of two third-year advanced prosthodontics courses that provide students with the opportunity to teach prosthodontic clinical skills to predoctoral students under the supervision of experienced prosthodontic educators.

PROS 6073. Literature Review Seminar 2. 1 Credit Hour.
This fall course for second-year advanced prosthodontics students is the third of six courses given in a three-year continuum of classical literature review seminars.

PROS 6074. Literature Review Seminar 2. 1 Credit Hour.
This spring course for second-year advanced prosthodontics students is the fourth of six courses given in a three-year continuum of classical literature review seminars.

PROS 6075. Literature Review Seminar 3. 1 Credit Hour.
This fall course for third year advanced prosthodontics students is the fifth of six courses given in a three-year continuum of classical literature review seminars.

PROS 6076. Literature Review Seminar 3. 1 Credit Hour.
This spring course for third year advanced prosthodontics students is the sixth of six courses given in a three-year continuum of classical literature review seminars.

PROS 6092. Research 2. 2 Credit Hours.
This summer course for advanced prosthodontics students is the first of three research courses in the second year. It is designed to offer an opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper suitable for publication in a peer-rated journal. Students in the master’s programs will be expected to collect and analyze data for a thesis which must be defended as the culmination of research efforts.

PROS 6093. Research 2. 2 Credit Hours.
This summer course for advanced prosthodontics students is the first of three research courses in the 2nd year. It is designed to offer an opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper suitable for publication in a peer-rated journal. Students in the masters programs will be expected to collect and analyze data for a thesis which must be defended as the culmination of research efforts.

PROS 6096. Research 3. 2 Credit Hours.
This fall course for advanced prosthodontics students is the second of three research courses in the 3rd year. It is designed to offer an opportunity to review the literature and to design and complete a laboratory or clinical research project under the direction of a faculty advisor. Research should result in a paper suitable for publication in a peer-rated journal. Students in the masters programs will be expected to collect and analyze data for a thesis which must be defended as the culmination of research efforts.

PROS 6097. Research 3. 2 Credit Hours.
This course for third-year students in advanced prosthodontics is offered in the fall only for M.S. Prosthodontics degree students and in both the fall and spring for certificate students who matriculated in 2011. It is designed to offer an opportunity to review the literature and design and complete a laboratory or clinical research project under the direction of a faculty advisor. Certificate program research should result in a paper suitable for publication in a peer-rated journal or a scholarly presentation at an approved specialty venue.

PROS 6098. Thesis. 1-9 Credit Hours.
Completion of an acceptable thesis is required for the Master of Science in Prosthodontics degree. Registration in this course for at least one semester is required of all degree candidates. Admission to candidacy for the Master of Science degree is required in order to enroll in this course.

PROS 6121. Advanced Prosthodontics 3. 1 Credit Hour.
This fall continuum course provides an open forum for a wide variety of faculty and guest consultants on topics of special interest to the specialty of prosthodontics.

PROS 6122. Advanced Prosthodontics 3. 1 Credit Hour.
This spring continuum course provides an open forum for a wide variety of faculty and guest consultants on topics of special interest to the specialty of prosthodontics.

PROS 7018. Fixed Prosthodontics. 1 Credit Hour.
This course is designed to be adjunct to and to complement the preclinical course so that the student correlates previous instruction in the clinical care of patients in need of crowns and/or fixed partial dentures.

PROS 7019. Fixed Prosthodontics Clinic. 4.5 Credit Hours.
This clinical course consists of diagnosis and treatment planning, instruction in making complete and partial veneer crown preparations and modifications, management of supportive tissues, provision of adequate pain control for restorative procedures, fabrication and insertion of provisional as well as cast restorations, and instruction to patients in the care and maintenance of restorations.
PROS 7091. Removable Partial Denture Prosthodontics Lecture. 0.5 Credit Hours.
This didactic course is designed to acquaint the student with a variety of approaches that may be used in treating the partially edentulous mouth. Lectures cover critical steps in treatment of the partially edentulous patient, stabilization of periodontically weakened teeth, intracoronal and other attachments used in partial denture construction, swinglock partial dentures, removable partial overdentures, and cancer therapy as it relates to prosthodontic treatment.

PROS 7092. Removable Partial Dentures Clinic. 1.5 Credit Hours.
A clinical experience designed to place continued emphasis on diagnosis, treatment planning, design principles, mouth preparation, and dental laboratory coordination. The student is given the opportunity to correlate biological and mechanical information in clinical care of patients requiring removable partial dentures. The student is required to complete treatment for one partial denture patient during the junior year.

PROS 7095. Complete Dentures Lecture. 1 Credit Hour.
This course offers a series of lectures designed to present more sophisticated concepts in the prosthodontic treatment of edentulous and partially edentulous patients not included in previous courses. Lecture topics include preparation of the tissues for dentures, complete denture esthetics, occlusal systems for complete dentures, single complete dentures, immediate dentures, overdentures, maintenance care for the complete denture patient, and relining of dentures.

PROS 7099. Complete Dentures Clinic. 2.5 Credit Hours.
This clinical course consists of diagnosis and treatment planning, management of supportive tissues, fabrication and placement of complete dentures, and instruction to patients in the care and maintenance of complete dentures. The clinical experiences encourage students to correlate biological and biomechanical information into the prosthodontic treatment of edentulous and partially edentulous patients.

PROS 8001. Dental Implantology. 0.5 Credit Hours.
This course is designed to be an ever-evolving lecture series designed to provide senior dental students with more information regarding advanced topics in implant dentistry. The premise of this course is to provide evidenced-based materials regarding the latest information and current topic of interest in the field of implant dentistry. Lecture topics may include but are not limited to advanced treatment planning, immediate provisionalization (Non-loaded) of dental implants, the controversy of connecting an implant to a natural tooth, implant esthetics, advanced prosthodontic techniques, and implant and the maxillofacial patient.

PROS 9021. Adv Prosthodontics 2. 5 Credit Hours.
This continuation course for second-year advanced prosthodontic students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontic care.

PROS 9022. Advanced Prosthodontics 2. 5 Credit Hours.
This continuation course for second-year advanced prosthodontic students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontic care.

PROS 9023. Advanced Prosthodontics 2. 5 Credit Hours.
This continuation course for second-year advanced prosthodontics students is designed to provide the postdoctoral student with the didactic basis for advanced clinical prosthodontic care.

PROS 9024. Adv Prosthodontics 3. 5 Credit Hours.
This course is designed to provide the postdoctoral student with the opportunity to gain the prerequisite background and clinical experience in prosthodontic procedures. Fixed, removable, and overdenture concepts and treatment procedures will be emphasized.

PROS 9029. Clinical Prosthodontics 2. 4.5 Credit Hours.
This fall course for second-year advanced prosthodontic students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a fifth clinical course in a progressively complex clinical prosthodontic curriculum. Each student will have opportunity to maintain a comprehensive prosthodontic practice involving fixed, removable, and implant treatment procedures.

PROS 9030. Clinical Prosthodontics 2. 2 Credit Hours.
This summer course for second-year advanced prosthodontics students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a fourth clinical course in a progressively complex clinical prosthodontic curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontic practice involving fixed, removable, and implant treatment procedures.

PROS 9031. Clinical Prosthodontics 1. 6 Credit Hours.
This course provides instruction in the laboratory procedures and clinical aspects of complete dentures, removable partial dentures, fixed, and implant prosthodontics. Residents are required to understand laboratory techniques and dental materials and to perform all phases of laboratory support related to clinical prosthodontics.

PROS 9032. Clinical Pros 1. 2 Credit Hours.
This spring course for advanced prosthodontic students is designed to provide extensive clinical experience in the broad spectrum of prosthodontics as a sixth clinical course in a progressively complex clinical prosthodontic curriculum. Each student will have the opportunity to maintain a comprehensive prosthodontic practice involving fixed, removable, and implant treatment procedures.

PROS 9040. Hosp Maxillofacial Rotation. 1.5 Credit Hour.
Rotation in the Maxillofacial Prosthetics Department gives residents clinical exposure to geriatric and maxillofacial patients. 3rd year residents provide treatment for a patient requiring an obturator prosthesis. Residents with special interest in maxillofacial prosthetics may have the opportunity to treat additional maxillofacial patients that require other various prostheses.

PROS 9073. Literature Seminar 1. 3 Credit Hours.
This course for second-year advanced prosthodontics students is one of a series of courses given in a three-year continuum of classical literature review seminars.

PROS 9074. Literature Seminar 2. 3 Credit Hours.
This course for second-year advanced prosthodontics students is one of a series of courses given in a three-year continuum of classical literature review seminars.

PROS 9075. Literature Seminar 2. 3 Credit Hours.
This course for second-year advanced prosthodontics students is one of a series of courses given in a three-year continuum of classical literature review seminars.

PROS 9076. Literature Seminar 3. 3 Credit Hours.
The broad field of prosthodontics literature is systematically reviewed with the objective of providing the postdoctoral student with a background of prosthodontics knowledge and history.

PROS 9077. Literature Seminar 3. 3 Credit Hours.
The broad field of prosthodontics literature is systematically reviewed with the objective of providing the postdoctoral student with a background of prosthodontics knowledge and history.

PROS 9097. Research. 1-9 Credit Hours.
The student develops a research protocol and background literature search for a clinical, laboratory, or animal model research project.
Courses

RESD 5044. Occlusion & TMD. 0.5 Credit Hours.
Residents will receive instruction for providing a limited occlusal equilibrium due to disorders such as local traumatic occlusion. The course will also cover recommended techniques for full-mouth occlusal equilibrium. A series of patients presenting with TMD-like symptoms will be presented, and diagnoses, perpetuating factors, and potential treatments will be discussed. The clinical portion of the course will involve residents taking impressions and bite registrations on their partners, sending these to a laboratory for splint fabrication, and inserting these appliances on their partners. Residents will have the opportunity to learn to palpate the masticatory and cervical musculature, in addition to the TMJs of their partners.

RESD 5095. Research Methodology 2-Thesis Proposal. 0.5 Credit Hours.
This course is a continuation of ORTH 5094 Research Methodology I.

RESD 6021. Advanced Dental Materials. 3.5 Credit Hours.
Students have an opportunity to become acquainted with sophisticated research equipment through hands-on exposures. Measurements of mechanical, physical, and chemical properties of commonly used dental materials give the student the opportunity to envision and formulate research projects in dental materials.

RESD 7010. Operative Dentistry Lecture. 1.5 Credit Hour.
A series of lectures designed to present more sophisticated didactic material in areas not included in the first and second year preclinical courses. This course serves as a forum for discussion of individual clinical problems and their solutions which are of interest to the class as a whole.

RESD 7011. Operative Dentistry Clinic. 4.5 Credit Hours.
Students are given the opportunity to commence the clinical practice of operative dentistry. Each student is expected to achieve competency in the restoration of teeth with various restorative materials. Students’ application of knowledge of proper patient management is assessed.

RESD 8051. Senior Esthetic Dentistry. 0.5 Credit Hours.
This course is designed to present available alternatives in esthetic dentistry, indication and clinical applications for each alternative, new materials designed for the concepts of esthetic dentistry, and appropriate methods of patient communication and patient management. Emphasis will be placed on clinical applications, efficacy of materials, precise communication with the laboratory concerning veneer shade information, and methods of doing chair-side color modifications.