TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™
EL PASO

Graduate School of Biomedical Sciences

2018-2019 Catalog
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Preface

The purpose of this publication is to assemble a set of guidelines and requirements that all students are subject to at the time of admission into the Texas Tech University Health Sciences Center El Paso (TTUHSC El Paso) Graduate School of Biomedical Sciences (GSBS).

The TTUHSC El Paso GSBS reserves the right to make changes to this catalog as necessary, with or without notice. Every effort will be made to notify all faculty and students when changes are made.

The TTUHSC El Paso GSBS reserves the right to institute, after due notice and during the course of a student’s work toward a degree or certificate, any new ruling that may be necessary for the good of the university and therefore, ultimately, of recipients of its degrees and certificates. Normally, a student may graduate under the provisions of the catalog in effect at the time of enrollment in the TTUHSC El Paso GSBS.

The TTUHSC El Paso GSBS also reserves the right to make changes to courses as needed. The right to make changes to tuition and fees is reserved as regulated by the Board of Regents.

All students are subject to the requirements listed in the TTUHSC El Paso Institutional Student Handbook Code of Professional and Academic Conduct, the Graduate School of Biomedical Sciences Student Handbook, and the guidelines and requirements given below.

Students with disabilities who need assistance should contact the Disability Support Services Office at:

disabilitysupport.elp@ttuhsc.edu or
elpaso.ttuhsce/studentservices/disability-support-services/default.aspx
Statement of Accreditation

Texas Tech University Health Sciences Center El Paso is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, masters, and doctoral degrees. Contact the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call 404-679-4500 for questions about the accreditation of Texas Tech University Health Sciences Center El Paso.

Mission Statement

The mission of TTUHSC El Paso is to improve the lives of people in our State and our community by focusing on the unique health care needs of socially and culturally diverse border populations through excellence in integrated education, research, and patient care. In order to support the institutional mission, the GSBS provides superior graduate education as well as leadership by increasing knowledge and understanding through scholarship and research.

The **mission of the TTUHSC El Paso GSBS** is to educate the next generation of scientists and health-related professionals by providing a dynamic research environment oriented to satisfy the learning needs of a multicultural group of students by fostering creativity and discovery.

The faculty and staff of the GSBS are committed to follow the TTUHSC El Paso goals and objectives that will enable the GSBS fulfill its mission, including:

- Foster the development of competent health care professionals.
- Recruit, develop, and retain outstanding employees.
- Advance knowledge through innovative, peer-review research.
- Improve community health through the provision of patient care services and health-related education.
- Operate effectively and efficiently through maximization of available resources.

elpaso.ttuhsc.edu/about/president/strategic-plan/default.aspx
**Expected Student Learning Outcomes**

GSBS student learning outcomes are described below:

**Biomedical Concepts and Theories**
Students will be able to comprehend basic concepts and theories in the fields of biochemistry, cell biology, laboratory methodologies, genes and function, and biomedical research in relation to human physiology and diseases.

**Written and Verbal Communication**
Students will be able to express and discuss effectively with peers and professors through oral presentations and written discourse.

**Independent Research**
Students will be able to plan, organize, conduct, and analyze biomedical research with direction from principal investigator.

**Critical Thinking**
Students will be able to recall, explain, integrate, and apply key concepts related to the fields of cancer research, infectious diseases, neurosciences, and diabetes & metabolism.

**Ethical Behavior**
Students will be able to identify, analyze, relate, and address the regulatory environment as well as the normative ethics of conducting biomedical research.

**Analytical Thinking**
Students will be able to display their understanding of analyzing and presenting data in order to design experiments and present genetic data analysis and basic biostatistics.

**Programs**

The TTUHSC El Paso GSBS offers two academic programs: a Master of Science (M.S.) in Biomedical Sciences and a Post-Baccalaureate Certificate Program.

**M.S. in Biomedical Sciences**
The M.S. in Biomedical Sciences is a two year program structured around a core curriculum in biomedical sciences that provides foundational coursework in the areas of biochemistry, cell biology, genetics, laboratory methodology, and biomedical research. Beyond providing the necessary coursework the program emphasizes on providing superior and competitive training environment in diverse state-of-the-art research laboratories by students engaging in a
mentored research project. Along with research experience, during the second year students have the opportunity to take elective courses that explore specialized topics, recent advances, and current literature within the biomedical sciences field. Instruction in these areas is provided by expert researchers and educators affiliated with both the Graduate School of Biomedical Sciences (GSBS) and the Paul L. Foster School of Medicine (PLFSOM).

If a M.S. in Biomedical Sciences student is in good standing and drops out of the program, the student may be eligible to receive a post-baccalaureate certificate if all required courses have been taken and graduation requirements are successfully fulfilled in a timely manner.

**Post-Baccalaureate Certificate Program**

The post-baccalaureate certificate program is a one year program intended to meet the supplemental educational needs of professionals. A graduate certificate program is a set of courses that provides a knowledge base and in-depth expertise in a specific subject matter. To take any graduate-level course, all prerequisite courses (including undergraduate courses) must first be completed. Students interested in the post-baccalaureate certificate program are required to have a bachelor’s degree.

Students graduating from the TTUHSC El Paso GSBS post-baccalaureate certificate program may apply to the TTUHSC El Paso GSBS M.S. in Biomedical Sciences program and the credits earned may be transferred towards the master’s program. In order to proceed, students must apply to the M.S. in Biomedical Sciences program and fulfill all admission requirements. Post-baccalaureate graduates are not guaranteed admission to the M.S. in Biomedical Sciences program. The M.S. in Biomedical Sciences program application fee may be waived at the discretion of the dean.

To receive a certificate of graduation, the student must have a grade point average (GPA) of 3.0 or better. Graduates of the post-baccalaureate program who have fulfilled all requirements for admission to TTUHSC El Paso’s Paul L. Foster School of Medicine are guaranteed a one-time interview. This one-time interview may take place either while the student is in the post-baccalaureate certificate program, or during the interview season immediately following successful completion of the certificate program.
Admissions

Admission to the GSBS is granted by the dean, upon the recommendation of the admissions committee. Applicants considered for admission must be in good standing with the last school attended.

There are three main criteria used to evaluate all applicants for admission:

1. **Academic records**: All academic records may be considered.

2. **Test scores**: Official Graduate Record Examination (GRE) scores or the Medical College Admission Test (MCAT) scores depending on the program.

3. **Individual profile**: Profiles may include recommendations and/or information on the student’s research background, motivation, multilingual proficiency, undergraduate institution(s), presentations, portfolios, and the admission interview. Admission committees may also consider work experience, demonstrated commitment to a particular field or study, and community involvement.

All applicants should allow ample time for required support documents to be received and added to the application file. Only students who have submitted completed application packages will be considered for admission. A completed application package consists of the following:

1. **Online application to the TTUHSC El Paso GSBS**
   a. All sections of the online application must be completed and submitted prior to the application closing date.
   b. Any admissions offer made under falsified application information is void.
   c. All applications are reviewed by the admissions committee. Offers are made in accordance with the committee’s recommendation and final approval by the dean.
   d. Any exceptions to these guidelines are made on a case-by-case basis with support of the admissions committee, and approval by the dean.

2. **Official Graduate Record Examination (GRE) scores**
   a. To be considered for admission into the master’s program, applicants need to submit a GRE score report that is no more than five years old. Official MCAT scores may be used in lieu of GRE scores upon approval by the dean, students must contact the GSBS main office for further information.
   b. All test scores must be sent directly by the Educational Testing Service to the GSBS main office. Photocopies or scanned copies of GRE scores will not be accepted.
   c. The GRE Designated Institution (DI) Code for the GSBS is **7452**.
Information about the GRE may be obtained from the Educational Testing Service, P.O. Box 6000, Princeton, NJ, 08541-6000, or gre.org.

This requirement applies to all degree program applicants, regardless of educational background. In accordance with Texas Education Code §51.842, (b) “An applicant's performance on a standardized test may not be used in the admissions or competitive scholarship process for a graduate or professional program as the sole criterion for consideration of the applicant or as the primary criterion to end consideration of the applicant.”

3. Official Medical College Admission Test (MCAT) scores
   a. To be considered for admission into the post-baccalaureate certificate program, applicants must submit an MCAT score report that is no more than five years old.
   b. All test scores must be sent directly to the GSBS main office. Photocopies or scanned copies of MCAT scores will not be accepted.
   c. Information about the MCAT may be obtained at aamc.org/.
   d. This requirement applies to all degree program applicants, regardless of educational background. In accordance with Texas Education Code §51.842, (b) “An applicant's performance on a standardized test may not be used in the admissions or competitive scholarship process for a graduate or professional program as the sole criterion for consideration of the applicant or as the primary criterion to end consideration of the applicant.”

4. Official transcripts
   a. U.S. applicants must have earned a bachelor’s degree from a regionally accredited institution in the United States or the equivalent of a U.S. bachelor’s degree from a foreign institution, which typically requires at least 120 U.S.-equivalent credit hours. U.S. applicants must submit an official transcript from each college or university attended. All degrees earned must appear on official transcripts.
   b. Applicants who attended an institution outside the U.S. must provide a course-by-course evaluation of all coursework taken at any degree-granting institution(s) recognized by the country’s government/governmental ministry. Any applicant who, because of current enrollment, cannot provide a final course-by-course transcript evaluation at the time of application must submit transcript evaluations of all completed coursework. Consideration for admission may be granted on the condition that a final course-by-course transcript evaluation is provided prior to enrollment. If the transcript evaluation states that an applicant has less than 120 U.S.-equivalent credit hours and lacks the equivalent of a U.S. bachelor’s degree, then the applicant has the option to seek an alternative evaluation from another GSBS-approved evaluation company and the GSBS will accept the evaluation that supports admission.
   c. Applicants must submit at least six semesters of coursework. Applicants must be in good standing with all schools attended, and be able to provide either official transcripts from any U.S. university attended, or course-by-course transcript evaluations and diploma information. Applicants are advised not to send
international transcripts or mark sheets to the GSBS.

5. **Letters of recommendation**
   a. A minimum of two letters of recommendation are required.
   b. All letters of recommendation must be submitted either through the online application system or emailed to GSBSEP@ttuhsc.edu. Emailed letters should be sent directly from the recommender’s institutional or work email address.
   c. Letters of recommendation or forms submitted by the applicant will not be accepted unless the original hard copy is submitted in a sealed envelope.

6. **Essay**: All applicants must submit a written essay through the online application system.

7. **Application fee**: A one-time, non-refundable application fee of $45 is required per application.
   a. Applicants that participated in the TTUHSC El Paso SABR program and wish to apply to one of our academic programs may be eligible for an application fee waiver at the dean’s discretion.
   b. Applicants that participated in the TTUHSC El Paso Post-baccalaureate Certificate Program and wish to apply to the TTUHSC M.S. in Biomedical Sciences may be eligible for an application fee waiver at the dean’s discretion.

### Enrollment

Once the applicant is recommended for admission, an email will be sent to the email address on file requesting the applicant to log into the application system and accept the admission offer. A one-time, non-refundable $50 placement fee is required upon admission acceptance that secures the student’s seat for matriculation.

Initial matriculation takes place in the fall semester. Failure to register in the term for which admission is granted requires an application for readmission. Graduate students are permitted to register at any time beginning the first day of advance registration. Instructions for adding/dropping courses will be email to students.

Upon admission, all GSBS students are subject to the requirements listed in the TTUHSC El Paso Institutional Student Handbook Code of Professional and Academic Conduct, the GSBS Student Handbook and GSBS Catalog.

After submitting the placement fee, the GSBS main office will email new students the following important information:
   a) New student orientation date.
   b) Laboratory Safety trainings that must be completed prior the first day of classes.
   c) HIPAA Privacy & Security Training.
d) CANVAS training.

e) Student Business Services information.

f) Student Services information.

g) Immunization requirements.

**Required Immunizations:** In order to protect the health of our TTUHSC El Paso community all entering students are required to provide proof of the following, regardless of whether they have had any history of the disease. All requirements must be submitted prior to new student orientation.

1. Two immunizations for varicella (chicken pox) or a titer proving immunity
2. Two doses of measles, mumps, and rubella or a titer proving immunity
3. A two-step tuberculosis skin test administered within the last 12 months
4. The hepatitis B series
5. A tetanus/diphtheria (Td) vaccine
6. A Tdap (tetanus, diphtheria, and acellular pertussis) vaccine; for adults, a one-time dose starting in 2005
7. A meningococcal vaccine (MCV); for adults 22 and younger, administered within the last five years

Immunization requirements are based on regulations, guidelines and recommendations available as of November, 2013 from the Texas Administrative Code (TAC), Texas Department of State Health Services (DSHS), the U.S. Centers for Disease Control and Prevention (CDC), and the U.S. Advisory Committee for Immunization Practices (ACIP). See attached CDC Healthcare Worker Vaccination Recommendations (2013). HSCEP OP 75.11., **Attachment A-Health Surveillance Program for Students.**

Immunization requirements and titers must be submitted to the Office of Occupational Health electronically by uploading documents to the OmniMD portal. Immunization requirements must be completed within 30 days after the fall semester starts.

**General Information**

**Registration:** Students are required to register for the appropriate courses in every semester in which they expect to receive assistance, use the facilities of the university, or take comprehensive examinations. The number of credit hours for which a student must enroll is 9 credit hours per semester.

**Schedule Changes and Withdrawals:** Any student who wishes to add or drop a course must initiate such action with the GSBS main office. Students should follow the academic calendar for deadlines associated with adding/dropping classes and withdrawing from the GSBS.
a) When a student officially withdraws from a course by the deadline set early in the term, a grade of W (withdrawal) is assigned.
b) Any student who fails to attend a course in which he/she is enrolled without notifying the GSBS main office or submitting an official withdrawal will receive an F in that course.
c) A withdrawal after the deadline results in either a W or a WF (withdrawal/fail), depending on the instructor’s assessment of the student’s work in the course up to the time of the official withdrawal.
d) The grade of W is not calculated in the GPA, whereas a grade of WF is calculated in the GPA.
e) In order for the student to withdraw from a course after the deadline for an automatic W, the student is responsible for sending an email to the GSBS main office stating his/her intent to withdraw from the course.
   I. Once the GSBS main office receives this email, the GSBS main office will request the course director to assess the student’s academic performance as at the moment of the withdrawal.
   II. Based on the course director’s assessment the student would receive either a W (if he/she withdraws with a passing grade at the time of withdrawal) or a WF (if withdrawing and failing the class).
   III. The GSBS main office will provide the registrar’s office with a completed grade change form with a grade of W or WF at the time of the official withdrawal.
f) It is important for students who receive financial aid that either withdraw or drop all courses during a semester to be aware of the refund policies and to understand the impact they will have on the aid released and the continued financial aid eligibility. Current refund policies for students who withdraw or drop all courses during a term are determined by the Higher Education Title IV refund regulations.
   I. If you have questions about your Title IV program funds, you can call the Federal Student Aid Information Center at 1-800-4-FEDAID (1-800-433-3243). TeleTYpewriter (TTY) users may call 1-800-730-8913. Information is also available on Student Aid.

**Leave of Absence:** Leave of absence and its length is granted by the dean upon recommendation of the GSBS graduate council. Leave of absence may be granted only in cases of serious medical conditions or other exceptional reasons. Leave of absence may not extend the maximum time allowed for completion of the degree.

a) Leave of absence within a semester.
   I. The student is responsible for contacting the GSBS main office to initiate the process.
   II. Once the GSBS main office is notified, the student must submit a Leave of Absence form.
   III. The Leave of Absence form must be approved and fully signed by the required parties in order to be considered official.
   IV. The GSBS graduate council may approve or reject the leave of absence.
V. The student is responsible for contacting professors regarding the material covered, assignments due, and any other requirements needed to complete the semester successfully.

b) Leave of absence (consecutive semesters – 12 months)
   I. The student is responsible for contacting the GSBS main office to initiate the process.
   II. Once the GSBS main office is notified, the student must submit a Leave of Absence form.
   III. The Leave of Absence form must be approved and fully signed by the required parties in order to be considered official.
   IV. The GSBS graduate council may approve or reject the leave of absence.
   V. Once the GSBS main office is notified, the GSBS main office will submit a memo to the Registrar’s office.

c) The student is responsible for providing ample time to the GSBS main office to process the paperwork in a timely manner.

d) Students who do not have an official leave of absence are subject to review for readmission by the standards in effect at the time of reconsideration

**Full-Time Study:** GSBS semesters are 16 weeks-long, 15 weeks of instruction plus one week for final examinations. Full-time enrollment is considered 9 credit hours for students during a regular semester. Students receiving (a) scholarship(s) must meet full-time enrollment requirements each semester.

**Registration Without Credit (Auditing):** Persons who wish to audit a course for no grade must initiate such action with the GSBS main office. Once the GSBS main office is notified, the student must submit Permission to Audit Course without Credit form. The Permission to Audit Course without Credit form must be approved and fully signed by the required parties in order to be considered official, such as the course director and the dean. Students auditing courses have the privilege of hearing or observing only and may hand in papers, take part in class discussions or laboratory work only with the course director’s explicit permission. Students auditing a course will not be listed on the class roster, no notation of the audit will be made on the student’s transcript, and no credit or grade will be granted.

**Auditing Fee:** Students enrolled for fewer than 12 semester credit hours in a semester must pay a $10 fee for the privilege of auditing a course. Written permission from the dean of the college in which the course is being taught and from the course instructor is required. No charge is assessed for enrollment of 12 or more semester credit hours. Further details may be found at the [Student Financial Information](#) website.

**Faculty and Staff Course Registration:** Full-time members of the TTUHSC El Paso faculty and staff may enroll in courses with the permission of the course director, and by submitting a GSBS application. By registering for graduate work, any faculty or staff enrolled in coursework become subject to the regulations of the GSBS.
**Academic Probation and Dismissal:** All students enrolled in the GSBS are required to maintain a high level of performance and comply fully with the policies of the institution. The GSBS reserves the right to place on probation or dismiss any graduate student who does not maintain satisfactory academic standing or who fails to conform to the regulations of the TTUHSC El Paso.

Probation applies for a designated period of time and may lead to more severe disciplinary sanctions if the student is found to be in violation of any institutional regulation(s) during the probationary period, such as:

1. If a student's grade point average (GPA) for a particular semester falls below 3.0, the student is placed on academic probation. The student must make a 3.0 GPA or better in the next semester in which he/she is enrolled. Failure to maintain a 3.0 GPA or higher in each succeeding semester may result in academic dismissal from the GSBS. Regulations governing scholastic probation are based on semester grade-point averages and apply regardless of overall grade-point average.

2. Students are also required to follow the TTUHSC El Paso Institutional Student Handbook Code of Professional and Academic Conduct, the GSBS Student Handbook, and the GSBS Catalog. Failure to do so may be grounds for academic probation or dismissal.

3. Students who receive a grade of C or below in two or more core courses are subject to academic probation.

**Attendance:** Whenever attendance and/or participation forms a basis for a portion or all of a course grade, students are provided with explicit written information (within the course syllabus) during the first week of classes. Such information is specific with regard to the penalty incurred for each absence and the means, if any, to compensate for the absence. It should be recognized that there may be certain situations where the student may not be permitted to make up the absence(s). Excused absences are determined by the course director.

**Extracurricular Activities:** Graduate students may participate in extracurricular activities within the guidelines of university policies. The Graduate Student Association (GSA) and the Student Government Association (SGA) offer many opportunities for participation. Second year master students are required to participate in the TTUHSC El Paso’s Annual Research Symposium which takes place during the spring semester so that all graduating students can gain experience presenting their research.

**English Language Proficiency:** A student found deficient in English may be required to satisfactorily complete certain English language courses (without graduate credit) before being considered for candidacy for a graduate degree.

**Students’ Responsibilities:** Every student is expected to become thoroughly familiar with TTUHSC El Paso regulations, guidelines, GSBS regulations, and degree requirements. Failure to
follow the regulations and requirements almost inevitably results in complications for which the GSBS cannot assume responsibility.

**TTUHSC El Paso Email:** To facilitate communications, the GSBS communicates exclusively through the student’s assigned TTUHSC El Paso email account (i.e., first.last@ttuhsc.edu). It is the student’s responsibility to check the TTUHSC El Paso email account for important information and notifications. Communication through personal email occurs only before admission to the GSBS or in unforeseen cases.

**Laptops:** A number of GSBS courses require a laptop; therefore, it is strongly recommended that all incoming students possess and maintain a laptop computer that meets the technical specifications of TTUHSC El Paso and their school or program. For further information contact the IT Help Desk at 915-215-4111 or ELP.HelpDesk@ttuhsc.edu.

**Scholarships:** The GSBS seeks to continually recruit and retain the best quality students. In support of that goal, the GSBS offers scholarships to master’s students. In order to maintain the scholarship, master students must maintain a minimum 3.0 GPA or better per semester. Failure to maintain a 3.0 GPA or higher in each semester will result in losing the GSBS scholarship for the succeeding semester.

**Transfer Credit:** Work completed at another graduate school is not transferred to the GSBS programs. Graduate credit is not granted for courses taken by correspondence.

**Waiving Requirements:** There is no automatic waiving of requirements at the GSBS.

**Tutoring:** Group and one-on-one tutoring is available. It is the responsibility of the student to contact the course director and faculty when tutoring is needed.

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**Graduation**

A student becomes a candidate to graduate as soon as all of the following requirements have been met:

1. All hours of required graduate work has been completed.
2. A cumulative grade point average (GPA) of 3.0 or better has been maintained by the end of the program.
3. Work to date is acceptable to the faculty concerned.
4. Intent to graduate application form has been submitted and approved.
5. The graduation fee has been received and processed.
6. The student’s degree plan conforms to the general requirements of the GSBS and the requirements of the particular program.
GPA Requirement for Graduation: For the Master’s program and the post-baccalaureate certificate program the minimum cumulative GPA required for graduation is a 3.0 GPA including all courses taken at the GSBS.

Semester of Graduation: The official graduation date is in May. Every candidate for a graduate degree and certificate of completion must be registered at the GSBS in the semester of graduation. Failure to graduate at the expected time requires additional registrations, as necessary, until graduation. Any student who does not complete all requirements for a graduate degree within the time limit will be dismissed.

Students seeking advanced degrees are also expected to graduate within a specified period of time. Per reporting guidelines from the Texas Higher Education Coordinating Board (THECB), students seeking master’s degrees are expected to graduate within 5 years.

Graduation Fee: Early in the semester of graduation, candidates for graduation must pay a one-time non-refundable $75 graduation fee to cover the cost of printing the diploma. If the candidate for graduation does not graduate in the semester in which the fee was paid the graduation fee must be paid again for any subsequent intended graduation dates.

Intent to Graduate Application Form: Candidates for graduation must submit an intent to graduate application form to the GSBS main office at the beginning of the semester of intended graduation. No candidate’s name will be placed on a tentative list for graduation unless this statement has been received by the GSBS main office by the specified deadline. Any candidate who fails to graduate at the expected time is required to submit a new intent to graduate application form for any subsequent intended graduation dates.

Master’s Degree and Post-Baccalaureate Certificate

Prerequisites: A substantial body of relevant undergraduate work and considerable background knowledge are essential for graduate study. Therefore, students whose undergraduate knowledge and skills are considered deficient in breadth may be required to complete additional preparatory work without degree credit. Such undergraduate “leveling” courses must be completed with a grade of B or better.

Master’s Program: The master’s program is a 2 year program comprised of 36 semester credit hours of graduate work.
1. Core Curriculum: Core curriculum courses are taken in both semesters of the first year. The curriculum is designed to give all GSBS master students a unified and coordinated
foundation that serves as a basis for further study in individual disciplines within the biomedical sciences.

2. Students may not drop a core course for academic reasons.

3. Core curriculum coursework includes:
   a. Biochemistry
   b. Cell Biology
   c. Genes and Function
   d. Laboratory Methods in Biomedical Sciences
   e. Introduction to Biomedical Research
   f. Research in Biomedical Sciences

4. Students who receive a grade of C or below in core course are required to repeat the courses and pay the associated fees.

5. Students must maintain a minimum 3.0 GPA or better per semester in order to maintain their scholarship.

6. Students who receive a grade of C or below in core courses already retaken will be subject to academic probation.

7. **Final written report:** While master students are not required to present a research thesis, the master program does require submission of a final written report on the outcome of the student’s research project.
   a. Only applies to the master’s degree program.

**Degree Plan:** Before graduation, master students assisted by the GSBS main office should submit a degree plan. Delay in submission of the degree plan may result in postponement of graduation eligibility. Approval of the degree plan does not, however, constitute admission to candidacy for a master’s degree. It merely signifies that the proposed plan is acceptable if the student satisfies all of the regulations of the GSBS and all of the requirements tied to the degree plan.

**Post-Baccalaureate Certificate Program:** The post-baccalaureate certificate program is a 1 year program comprised of 18 semester credit hours of graduate work.
   1. Post-Baccalaureate students take the same course as the first-year master students.
   2. Students may not drop a course for academic reasons.
   3. Students must maintain a minimum 3.0 GPA or better to receive the certificate of completion.

**Certificate Plan:** Before graduation, post-baccalaureate students assisted by the GSBS main office should submit a certificate plan. Delay in submission of the certificate plan may result in postponement of attaining the certificate of completion. Approval of the certificate plan does not, however, constitute admission to attaining a certificate of completion. It merely signifies that the proposed plan is acceptable if the student satisfies all of the regulations of the GSBS and all of the requirements tied to the certificate plan.

**Time Limit:** Students seeking advanced degrees are expected to graduate within a specified period of time. GSBS students whose graduate study is interrupted by military service are
granted an extension for the period of their military duty (not to exceed 5 years). Per reporting guidelines established by the Texas Higher Education Coordinating Board (THECB).

Course Listings

Reading Catalog Course Descriptions: Courses are listed by program. Not all courses listed in this catalog are offered every year. The university reserves the right to cancel any scheduled course or withdraw any program from the list of offerings when the best interests of the institution require such action.

Example Course Description:

GSBE 5101 — Responsible Conduct of Research (1:1:0): This course addresses the regulatory and ethical environment of today’s biomedical research, as well as topics such as authorship and data management. (F)

Subject Prefix: Indicates the course subject (GSBE = Graduate School of Biomedical Sciences El Paso)

First Digit in Course Number: Indicates the academic level of the course; graduate standing is a prerequisite for enrollment in any course within the 5000 series or above, as the series is intended only for graduate students. Although graduate students occasionally enroll in undergraduate courses to balance deficiencies in their prerequisite coursework, any coursework credited toward a graduate degree must, except in rare instances and with prior approval from the GSBS dean, be of graduate level (5000 series or above).

Second Digit in Course Number: Indicates the semester hour credit value of the course; for example, GSBE 5101 is a graduate-level course with 1 semester hour of credit.

Last Two Digits of Course Number: The distinguishing numbers of the course.

Numbers in Parentheses (1:1:0): The first number denotes the total credit hour value of the course, the second number represents lecture hours, and the third number represents lab hours. When the letter V precedes the numbers (e.g., V1-6), this indicates that the class is a variable credit course. Such courses are ordinarily research courses and permit enrollment for any number of hours, up to the limit indicated by the second number in parentheses.

Prerequisites: Some courses have specific prerequisites that must be met before a student is eligible to enroll.

Instructional Method: Information in parenthesis after the course description describes the course instructional method, defined as:
Traditional, face-to-face course
Hybrid course with a combination of face-to-face and significant web-based instruction
Online course with most, if not all, web-based instruction
A course in which synchronous instruction is delivered via two-way transmission between an instructor and student who are not in the same physical location

More than one instructional method (e.g., F/IVC) indicates that the instructional method varies by course section.

Grading Policies

Grades: The GSBS uses a letter grade system from A to WF. All grades are converted to points in computing grade point averages. Instructors may NOT choose to add a plus or a minus to the grade. No final grade assigned for a graduate-level course may be raised unless an error has been made. Substituting another course for one completed with a low grade is not permitted. Work completed at another graduate school is not transferrable to the GSBS programs.

Grade Point Chart

<table>
<thead>
<tr>
<th>Grade</th>
<th>Point</th>
<th>Grade Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td>Excellent; meets degree requirements</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>Good; meets degree requirements</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>Below average; fails to meet requirements for core courses. Core course must be retaken. Average; meets requirements for elective courses and non-core courses. Average; meets requirements for post-baccalaureate program requirements.</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>Below average; fails to meet program requirements. Course must be retaken.</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>Failing; does not meet degree requirements. Course must be retaken</td>
</tr>
<tr>
<td>I</td>
<td>0</td>
<td>Incomplete; given only when a student's work is satisfactory in quality but, due to reasons beyond their control, has not been completed. It is not given in lieu of an F. The instructor assigning the grade will stipulate in writing at the time the grade is given the conditions under which the “I” was given and how it can be removed. It is the student's responsibility to obtain a grade change form from the GSBS main office and to obtain signatures from the appropriate parties involved. In the event that the “I” remains on the student's record for a year without completion, it will automatically be replaced with an F. Withdrawal from the institution will not waive this</td>
</tr>
</tbody>
</table>

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policy nor will it change the conditions under which the “I” may be removed.

<table>
<thead>
<tr>
<th>Grading</th>
<th>Code</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>0</td>
<td>Withdrawal; given for a course officially dropped before the deadline set in the academic calendar or if a class is dropped after the deadline but the student has a passing grade at the time of withdrawal.</td>
<td></td>
</tr>
<tr>
<td>WF</td>
<td>0</td>
<td>Withdrawal/Failing; given for a course dropped after the deadline set in the academic calendar, when the student's work is not passing at the time the course is dropped or when the student is required by the dean to drop the course for failure to attend.</td>
<td></td>
</tr>
</tbody>
</table>

**Grading Scale**

The following scale applies to all courses at the GSBS.

1. 100-90 = A
2. 89-80 = B
3. 79-70 = C
4. 69-60 = D
5. 59 and below = F

**Students Covered By This Policy:** These grading policies apply to students enrolled in the courses necessary to complete the requirements for the Master of Science in Biomedical Sciences and the Post-Baccalaureate Certificate at the GSBS. These policies do not cover the course work done for the other degree programs in which the student may be enrolled.

**Student Performance Assessment**

**Introduction:** The responsibility of assessing student performance rests within the faculty of the GSBS. Faculty have an obligation to the students, TTUHSC El Paso, GSBS, and society to award passing grades only to those students who have demonstrated mastery of the course material.

In addition to assessing students' knowledge and skills, the faculty has the obligation to determine whether students' behavior or conduct is suitable to represent the scientific community. It is inappropriate to allow a student to progress or graduate when unacceptable behavior or unprofessional conduct have occurred, such as, cheating or plagiarism.

Refer to the GSBS student handbook and the TTUHSC El Paso Institutional Student Handbook Code of Professional and Academic Conduct for further information regarding unacceptable and unprofessional conduct.
Every attempt will be made to apply the principles of fairness and due process when considering the actions of the faculty or administration that might adversely affect the students.

**Monitoring Student Progress:** The dean of the GSBS, the Graduate Council and course directors are responsible for monitoring the progress of GSBS students during their course of study in order to provide or refer students to the appropriate academic or personal counseling services, if applicable. The Office of Student Affairs will provide staff support to the GSBS as requested. Student progress will be reviewed by the dean at least by the end of each semester in the context of all course work, student’s professionalism, evidence of progressive improvement and personal circumstances.

**Responsibilities of the Dean:** The dean, as the chief academic officer, has the power to make final decisions concerning students. During a student hearing procedure, the decision of the dean regarding the hearing committee’s findings and recommendations is final.

**Student Considered “At Risk”:**
1. If course work is incomplete.
2. If several courses have been failed.
3. If course directors or faculty identify poor performance on given assignments or low test scores.
4. Also, if there are concerns about professionalism regarding the student’s behavior.

If a student is considered “at risk” they will be placed on academic probation. A proposed learning plan will be devised in order to strengthen identified deficiencies. It is the responsibility of the student to follow the learning plan and to follow up with the dean regarding progress.

Remediation is recommended by the course director and agreed on by the dean. However, students may be dismissed without academic watch or warning ever being designated. The dean may also choose to remove “Good Standing” as a disciplinary action. Remedial work will not be counted as elective time in satisfying the conditions for graduation.

**Transcript Notation Fail (F):** When a student receives a final failing grade in a course and it is not required for the student to repeat the course, then a grade of “F” (Fail) will be entered on the transcript.

**Documentation of Student Academic Performance:** All grades will be recorded in WebRaider and will be available in the student’s electronic portfolio. The TTUHSC El Paso Registrar Office maintains the official transcript of all students.

**General Issues:** Progress is not bound by categorical or arithmetic assessment of student performance but rather reviewed based on each student in the context of his/her academic achievement and any other circumstances that may influence performance. If a student
exhibits conduct or behavior inconsistent with ethical standards and professionalism, a grade of F may be given.

**Conduct or Behavior:** Conduct and behavior that occurs beyond the boundaries of a classroom or laboratory may also be considered. In that case, the student will be referred for disposition of the cases described under the Code of Professional and Academic Conduct in the TTUHSC El Paso Student Affairs Handbook.

**Challenging Student Records or Grades:** Students have the right to challenge records, grades, and information directly relating to them. A student who wishes to appeal a grade must file a formal, written grade appeal within five business days of the beginning of the next semester. A grade can be formally appealed only when there is demonstrable evidence that prejudice, or arbitrary or capricious action on the part of the instructor has influenced the grade. The burden of proof that such an unfair influence has affected a grade rests with the student who appeals the grade.

## Master’s Degree Curriculum

**Overview:** All biomedical science fields recognize that advanced scientific knowledge is the foundation for both basic and translational research. To that end, full-time research is preceded by a curriculum that introduces scientific facts and provides opportunities for the development of critical thinking, synthesis of information, development of factual knowledge, and the ability to read and comprehend original literature.

**Curriculum Design and Courses:** Core curriculum courses (Core I-VI) must be passed with a final grade of B or better. Obtaining a C as a final grade will require the student to retake the course. Expected graduation date may be delayed by this.

**FIRST YEAR**

**Fall Semester**

**GSBE 5104 — Biomedical Sciences Seminar (1:1:0):** This course offers presentations, journal articles, and related material in biomedical sciences presented by faculty and special guests for group discussion. (F)

**GSBE 5201 — Core IV: Laboratory Methods in Biomedical Sciences I (2:2:0):** This course introduces first-year graduate students to the fundamental principles and techniques in basic science research. (F)

**GSBE 5301 — Core I: Biochemistry (3:3:0):** This course teaches structure, biosynthesis, and functions of the major classes of organic compounds with particular reference
to organic molecules and their relationship to polymers, such as carbohydrates, lipids, proteins, and nucleic acids. (F)

**GSBE 5302 — Core II: Cell Biology (3:3:0):** This course teaches the structural details and molecular functions of the different parts of the cell. The course also deals with the signal transduction processes and cellular functions required for cell growth and death. (F)

**Spring Semester**

**GSBE 5101 — Responsible Conduct of Research (1:1:0):** This course addresses the regulatory and ethical environment of today’s biomedical research, as well as topics such as authorship and data management. (F)

**GSBE 5102 — Laboratory Methods in Biomedical Sciences II (1:1:0):** This course provides an integrated approach to modern biochemical techniques in biochemistry, cell and molecular biology, and genetics, including RNA interference and recombinant DNA techniques. (F)

**GSBE 5104 — Biomedical Sciences Seminar (1:1:0):** Students are required to attend all seminars sponsored by the biomedical studies program. Students who wish to deviate from the yearly seminar requirement must obtain approval from the graduate program committee. (F)

**GSBE 5303 — Core III: Genes and Function (3:3:0):** This course teaches the principles of molecular genetics. The main topics covered in this course include gene structure and function at the molecular level, regulation of gene expression, organization of genetic information in prokaryotes and eukaryotes, genetic rearrangements, and genetic engineering. (F)

**GSBE 5310 — Introduction to Statistical Methods in Biomedical Sciences (3:3:0):** This course introduces the basic concepts and methods for presenting and analyzing biomedical data. Topics include concepts of estimation and testing, experiment design, an introduction to randomized clinical trials, sample size and power calculation, curve fitting, ROC analysis, and statistics for genetic data. (F)

**SECOND YEAR**

**Fall Semester**

**GSBE 5104 — Biomedical Sciences Seminar (1:1:0):** Students are required to attend all seminars sponsored by the biomedical studies program. Students who wish to deviate from the yearly seminar requirement must obtain approval from the graduate program committee. (F)
GSBE 5220 — Cancer Biology and Therapeutics (2:2:0): Students in this course will emerge with an advanced understanding of the molecular and cellular basis of cancer. The principles of cancer biology — from the origin of cancer to therapeutic interventions — are addressed. (F)

GSBE 5222 — Advanced Human Genetics (2:2:0): This course covers, in detail, population genetics, cytogenetics, molecular biology, and biochemistry as they relate to human heredity and genetic disorders. It includes discussion of current research literature. (F)

GSBE 5224 — Cellular and Molecular Neuroscience (2:2:0): This course addresses molecular mechanisms of neuro-degeneration associated with neurodegenerative disorders, including spinal muscular atrophy, Parkinson’s disease, Alzheimer’s disease, Amyotrophic Lateral Sclerosis and Huntington’s disease. The course consists of lectures and critical discussions of recent research papers.

GSBE 5226 — Principles of Virology (2:2:0): This course covers material relating to the principals of virology. Students will learn about the molecular biology of viruses, mechanisms of viral pathogenesis and methods of host control. (F)

GSBE 5640 — Core V: Introduction to Biomedical Research (laboratory rotations) (6:0:18): This course offers a hands-on introduction to the laboratories in which students may wish to conduct their thesis or non-thesis research. (F)

Spring Semester

GSBE 5104 — Biomedical Sciences Seminar (1:1:0): Students are required to attend all seminars sponsored by the biomedical studies program. Students who wish to deviate from the yearly seminar requirement must obtain approval from the graduate program committee. (F)

GSBE 5221 — Microbial Genetics (2:2:0): This course covers current techniques in genetic analysis, molecular biology, and gene regulation in microorganisms, with an emphasis on bacteria and bacteriophages. (F)

GSBE 5223 — Molecular Nutrition, Diabetes, and Epigenetics (2:2:0): This course will teach Pathogenesis of diabetes, Genetic variants and risk of diabetes and obesity with Breast Cancer, Molecular basis of Diet supplementation, Insulin resistance, Diet-gene interactions in the development of diabetes, Parental nutrition and Epigenetics. (F)

GSBE 5225 — Immunology (2:2:0): This course teaches basic and advanced concepts in immunology, including a survey of immunology as a host response to foreign agents, the nature of antigens and antibodies, effector and memory T cell
responses, innate and adaptive immunity to microbial infections, allergic reactions, and tumor immunology. (F)

**GSBE 5227 — Medical Physiology (2:2:0):** This course lays the basis for understanding how cells, tissues, organs, and organ systems function together to create one organism. Students will learn from biomedical professors in graduate-level courses, expanding their knowledge of advance human physiological principles. (F)

**GSBE 7000 — Research in Biomedical Studies (V1-18):** In this course, students engage in full-time laboratory research in a TTUHSC El Paso laboratory, under the direct supervision of a graduate faculty member. Emphasis is placed on experimental methods and independent research on projects related to biomedical studies. After a student is well-established in his/her research, additional rotations may be done to gain expertise in techniques specific to the student’s research (if not available in the faculty advisor’s laboratory). The course if repeatable if different methods are covered for each registration. (F)

**Final Written Research Report**

_Students are expected to submit a final research report as part of the requirements for GSBE 7000 — Research in Biomedical Studies prior graduation._ The master’s final written research report represents independent student work, conducted under the supervision of a GSBS faculty mentor, and is expected to be written clearly and concisely. Students must earn a grade of B or better on the research report to qualify for graduation. A copy of the research report must be submitted to the GSBS main office a week before the end of the semester.

Enrollment in GSBE 7000 — Research in Biomedical Studies is required for the master’s research report. Review the syllabus for this course for specific details and information.

**Laboratory Research**

Laboratory research is conducted during the second year of the master’s program. Laboratory work is incorporated into GSBE 5640 — Core V: Introduction to Biomedical Research and GSBE 7000 — Core VI: Research in Biomedical Studies. The goal of these courses and the laboratory research is to formally introduce students to research and to determine if the student has an interest in a particular research area. Laboratory works is performed under the supervision of a GSBS faculty member. The GSBS faculty member becomes a mentor and is required to perform a written evaluation of the student’s performance at the end of the semester. The signed evaluation form is included in the student’s program file and it is considered into the grading process for each class.
Post-Baccalaureate Curriculum

Fall Semester

GSBE 5104 — Biomedical Sciences Seminar (1:1:0): This course offers presentations, journal articles, and related material in biomedical sciences presented by faculty and special guests for group discussion. (F)

GSBE 5201 — Core IV: Laboratory Methods in Biomedical Sciences I (2:2:0): This course introduces first-year graduate students to the fundamental principles and techniques in basic science research. (F)

GSBE 5301 — Core I: Biochemistry (3:3:0): This course teaches structure, biosynthesis, and functions of the major classes of organic compounds with particular reference to organic molecules and their relationship to polymers, such as carbohydrates, lipids, proteins, and nucleic acids. (F)

GSBE 5302 — Core II: Cell Biology (3:3:0): This course teaches the structural details and molecular functions of the different parts of the cell. The course also deals with the signal transduction processes and cellular functions required for cell growth and death. (F)

Spring Semester

GSBE 5101 — Responsible Conduct of Research (1:1:0): This course addresses the regulatory and ethical environment of today’s biomedical research, as well as topics such as authorship and data management. (F)

GSBE 5102 — Laboratory Methods in Biomedical Sciences II (1:1:0): This course provides an integrated approach to modern biochemical techniques in biochemistry, cell and molecular biology, and genetics, including RNA interference and recombinant DNA techniques. (F)

GSBE 5104 — Biomedical Sciences Seminar (1:1:0): Students are required to attend all seminars sponsored by the biomedical studies program. Students who wish to deviate from the yearly seminar requirement must obtain approval from the graduate program committee. (F)
GSBE 5303 — Core III: Genes and Function (3:3:0): This course teaches the principles of molecular genetics. The main topics covered in this course include gene structure and function at the molecular level, regulation of gene expression, organization of genetic information in prokaryotes and eukaryotes, genetic rearrangements, and genetic engineering. (F)

GSBE 5310 — Introduction to Statistical Methods in Biomedical Sciences (3:3:0): This course introduces the basic concepts and methods for presenting and analyzing biomedical data. Topics include concepts of estimation and testing, experiment design, an introduction to randomized clinical trials, sample size and power calculation, curve fitting, ROC analysis, and statistics for genetic data. (F)

TTUHSC El Paso Title IX

The University does not tolerate discrimination or harassment based on or related to sex, race, national origin, religion, age, disability, protected veteran status, genetic information, or other protected categories, classes, or characteristics. While sexual orientation and gender identity are not explicitly protected categories under state or federal law, it is the University's policy not to discriminate in employment, admission, or use of programs, activities, facilities, or services on these bases.

The University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex and other types of Sexual Misconduct.

The University will not take any disciplinary action against a student enrolled at the University who in good faith reports to the University being the victim of, or a witness to, an incident of Sexual Harassment, Sexual Assault, Dating Violence, or Stalking for a violation by the student of the TTUHSC Student Handbook, Code of Professional Conduct, occurring at or near the time of the incident, regardless of the location at which the incident occurred or the outcome of the University’s disciplinary process regarding the incident, if any.

The University reserves the right to investigate to determine whether a report of an incident of Sexual Harassment, Sexual Assault, Dating Violence, or Stalking was made in good faith. After such investigation, the Title IX Coordinator or his/her designee will make a determination as to whether a student is entitled to amnesty. Once a determination is made regarding amnesty for a student, such determination is final and may not be revoked.
Notwithstanding the forgoing, amnesty does not apply to a student who reports the student’s own commission or assistance in the commission of Sexual Harassment, Sexual Assault, Dating Violence, or stalking.

Although students eligible for amnesty may avoid formal disciplinary action under these amnesty provisions, amnesty does not preclude the University from requiring students to participate in directives such as counseling or educational opportunities relating to the conduct students were engaged in.

Abuse of these amnesty provisions by a student may result in a violation of the TTUHSC Student Handbook, Code of Professional Conduct. The amnesty provisions do not impact criminal proceedings or charges, mandatory reporting to state licensing boards, legal actions, or actions required to comply with professional ethic requirements.

For more information please contact:
Deputy Title IX Coordinator for Students at (915) 215-4786,
Title IX Coordinator for TTUHSC El Paso at (915) 215-4140
Or refer to the HSCEP OP 5103