

# TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER™

## Graduate School of Biomedical Sciences

### GSBS Catalog 2022 - 2023

#### Administration

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## Preface

The purpose of this publication is to assemble a set of guidelines, instructions, and information concerning the operational procedures of the Graduate School of Biomedical Sciences (GSBS). The Graduate School of Biomedical Sciences reserves the right to make changes as necessary, without notice, although every effort will be made to notify programs/concentrations and students when changes are made. Specific programs (Biotechnology, Biomedical Sciences, Graduate Medical Education Sciences, and Pharmaceutical Sciences) or concentrations within the Biomedical Sciences program (Biochemistry, Cellular and Molecular Biology, Immunology and Infectious Diseases, Molecular Biophysics, and Translational Neuroscience and Pharmacology) may enact stricter guidelines and policies for their graduate students. **Additional information about GSBS programs and links to all forms are located on the Current Students page of the GSBS website.**

The Graduate School of Biomedical Sciences, Programs and Concentrations reserves the right to institute, after due notice and during the course of a student's work toward a degree, any new ruling which may be necessary for the good of the University and therefore, ultimately, of recipients of its degrees. Normally a student may graduate under the provisions of the catalog in effect at the time of enrollment in the GSBS. The GSBS also reserves the right to make changes in courses as needed. The right to make changes in tuition and fees is reserved as regulated by the Board of Regents.

Students with disabilities who need assistance should contact Student Disability Services in Room 2C412, or by phone at 806.743.1926.

## Accreditation

Texas Tech University Health Sciences Center is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award baccalaureate, masters, doctoral, and professional degrees. Questions about the accreditation of Texas Tech University Health Sciences Center may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097, by calling (404) 679-4500, or by using information available on SACSCOC's website ([www.sacscoc.org](http://www.sacscoc.org)).

## TTUHSC Mission Statement

### Vision

Transform healthcare through innovation and collaboration.

### Mission

As a comprehensive health sciences center, our mission is to enrich the lives of others by educating students to become collaborative health care professionals, providing excellent patient care, and advancing knowledge through innovative research.

## GSBS Mission Statement

In support of the institutional mission, the Graduate School of Biomedical Sciences strives to provide superior graduate education as well as leadership in increasing knowledge and understanding through scholarship and research. The mission of the Graduate School of Biomedical Sciences is to educate the next generation of scientists and health-related professionals in a dynamic and productive research environment that fosters creativity and discovery. In order to accomplish the mission, the faculty and staff of the Graduate School of Biomedical Sciences are committed to:

- Providing the larger academic community, as well as future employers, with graduates who are highly competent, independent, and ethical researchers and teachers;
- Demonstrating in all pursuits honesty, integrity, trustworthiness, and commitment to academic freedom;
- Ensuring that GSBS faculty, staff, and students are supported in their efforts with state-of-the art resources, facilities, and training opportunities;
- Serving as leaders in the community for the advancement of knowledge related to the basic biomedical and related health sciences.
- Ensuring an environment that values a diversity of people and ideas.

## Administrative Structure

GSBS is one of six schools within the Texas Tech University Health Sciences Center (TTUHSC). The Graduate Faculty membership within GSBS is composed of faculty who have appointments with either the School of Medicine (SOM) or School of Pharmacy (SOP). In order to function efficiently, the GSBS faculty and students operate daily out of the schools and department listed above. The Chair of each department works with GSBS to help oversee the educational programs.

GSBS contains four Programs of study as well as four concentrations, which are defined under the Graduate Programs section of this handbook. The responsibility for the Graduate School of Biomedical Sciences is under the GSBS Dean, Brandt Schneider, Ph.D. The day-to-day management of the GSBS is under the direction of the Sr. Associate Dean, Michael Blanton, Ph.D., and Assistant Dean, Pamela Johnson, M.B.A. Graduate affairs are discussed and developed by a Graduate Council, which consists of two GSBS graduate faculty members from each program/concentration; an ex officio member from the TTU Graduate School; and an ex officio graduate student member elected by the GSBS Graduate Student Association. The GSBS Dean is the Chair of the Graduate Council, which operates in an advisory capacity to the Dean.

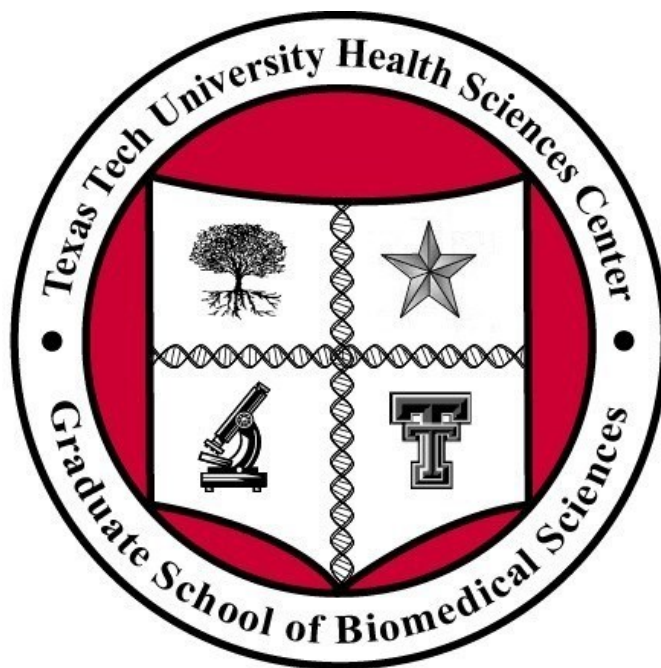
## The GSBS Oath

I acknowledge that the mission of scientific research is a true and noble calling to discover truths that are hidden and to reveal wisdom yet unknown; always for the greater good. I welcome the privilege and opportunity to join in this mission, and to dedicate the talents that I have and the education that I have gained in this higher purpose. Moreover, I pledge to use this knowledge and wisdom I have achieved only for the improvement of life. In this journey of discovery, I promise to always be honest, accurate, and fair, in all things and in all matters, and to always conduct my affairs with excellence and ambition.

## The GSBS Symbol

### Symbol Description:

The shield of the GSBS represents our dedication to protect life through scientific advancements in research. The double helix divides the shield into four quadrants and connects all forms of life. At the top left, the tree symbolizes the scientific process, where knowledge has deep roots, and a strong base, and the thin branches of solitary ideas give rise to seeds, which leave the tree and start new lines of thought. The star at the right represents the direction a scientist must follow as new avenues of research are revealed to us. At the bottom left, a microscope shows the scientists' commitment to look deeper for explanations. The Double T at the bottom right represents Texas Tech University Health Sciences Center, the institution that has taught us these lessons.



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## Graduate Degree Programs

The Graduate School of Biomedical Sciences has four degree programs: Biotechnology (master's only); Graduate Medical Education Sciences, Pharmaceutical Sciences, and Biomedical Sciences. The Biomedical Sciences program consists of four concentrations which are defined as the research areas within the program. Students entering into the Biomedical Sciences Program are required to select a concentration at the end of their first year.

GSBS programs leading to the M.S. and Ph.D. degrees are:

Doctoral Degrees:

- Biomedical Sciences\*
- Pharmaceutical Sciences

Master Degrees:

- Biomedical Sciences\* (Not Available for Admission, Apply to Biotechnology)
- Biotechnology
- Graduate Medical Education Sciences
- Pharmaceutical Sciences

\*Biomedical Sciences:

Areas of Concentrations include:

- Biochemistry, Cellular and Molecular Biology (Ph.D. only)
- Immunology and Infectious Diseases (Ph.D. only)
- Molecular Biophysics (Ph.D. only)
- Translational Neuroscience and Pharmacology (Ph.D. only)

## Campuses

Lubbock	Biomedical Sciences (Ph.D., M.S.) Biotechnology (M.S.) Graduate Medical Education Sciences (M.S.)
Abilene	Biotechnology (M.S.) Pharmaceutical Sciences (Ph.D.)
Amarillo	Pharmaceutical Sciences (Ph.D., M.S.)

## Dual Degree Programs

Students in good academic standing may be eligible to apply to the following dual degree programs:

Partner:	GSBS Program:	Dual Degree:
TTU School of Law	Biotechnology M.S.	J.D./M.S.
TTUHSC School of Medicine	Biotechnology M.S.	M.D./M.S.
TTUHSC School of Medicine	Biomedical Sciences M.S.	M.D./M.S.
TTUHSC School of Medicine	Biomedical Sciences Ph.D.	M.D./Ph.D.
TTU Rawls College of Business	Biotechnology M.S.	M.S./M.B.A.
TTU Rawls College of Business	Biomedical Sciences Ph.D.	M.B.A./Ph.D.

Students must apply to each school or program separately. For more information regarding the dual degree program application

process, email [graduate.school@ttuhsc.edu](mailto:graduate.school@ttuhsc.edu).

# Admissions

**Admission to a Masters or Doctoral Program.** Admission to any graduate degree program is granted by the Dean of the Graduate School of Biomedical Sciences (or appointed delegate) upon the recommendation of the GSBS Admissions Committee and the program/concentration faculty. The applicant must be in good standing with the school last attended. Only students who have submitted completed applications will be considered for admission. The programs and concentrations conduct a preliminary application review to determine which applications will be forwarded to the GSBS Admissions Committee. The Ph.D. Selection Committee reviews all completed Biomedical Sciences Ph.D. applications, conducts interviews with selected applicants, then determines which applications to move forward to the GSBS Admissions Committee. A similar review process occurs for Biotechnology, Graduate Medical Education Sciences, and Pharmaceutical Sciences.

A completed application consists of the following:

1. Application to Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences:

Applications for the basic sciences programs are received online at: [www.bioraider.com](http://www.bioraider.com). Falsification of applications information will void admission to Texas Tech University Health Sciences Center. All sections of the online application must be completed, and it must be submitted **prior** to the application closing date. Application deadlines and application instructions are available on the **Admissions** page of the GSBS website.

Applications are accepted using the online application system and must be completed by the stated deadline. In addition, all required supplemental documents must also be received by the application deadline. Review will be completed by the program/concentration and by the GSBS Admissions Committee, and offers will be made in accordance with the committee's recommendation and by approval of the GSBS Dean (or appointed delegate). Matriculation will generally occur in the Fall semester, except Pharmaceutical Sciences Ph.D. which has Fall, Spring and Summer admission cycles. Exceptions to these guidelines will be taken on a case by case basis; with support from a faculty mentor, and upon the GSBS Admission Committee's review and recommendation followed by approval of the GSBS Dean.

2. Official Graduate Record Examination (GRE) score report no more than five years old. This is a requirement for all international applicants for all degree programs regardless of educational background. The GRE is optional for domestic applicants to the following degree programs: Biomedical Sciences Ph.D., and Biotechnology M.S. The GRE is required for both domestic and international applicants to the following degree programs: Graduate Medical Education Sciences M.S., Pharmaceutical Sciences M.S., and Pharmaceutical Sciences Ph.D. Subject tests are not required, although the Graduate Medical Education Sciences M.S. program highly recommends applicants submitting a GRE score also submit the GRE Biology or Chemistry subject test scores. In accordance with **Texas Education Code §51.842**, the applicant's performance on a standardized test is not to be used in the admissions or competitive scholarship process as the sole criterion to end consideration of the applicant. Information about the GRE may be obtained from the Educational Testing Service, PO Box 6000, Princeton NJ 08541-6000 or [www.gre.org](http://www.gre.org). All test scores must be sent directly from the Educational Testing Service to the TTUHSC Office of the Registrar. Photocopies or scanned copies of GRE scores will not be accepted. The institution code for Texas Tech University Health Sciences Center is 6851. MCAT in lieu of GRE is occasionally granted to applicants applying to the Biotechnology and Graduate Medical Education Sciences. MCAT in lieu of GRE requires Senior Associate Dean approval. Email [graduate.school@ttuhsc.edu](mailto:graduate.school@ttuhsc.edu) for specific instructions.
3. Proof of English Proficiency: International applications who do not qualify for exceptions (see below) must submit one of the following as proof of English proficiency:

**Test of English as a Foreign Language (TOEFL)** - The minimum TOEFL score required is 550 (paper-based version) or 79 (internet-based version). The TOEFL score must be received directly from the Educational Testing Service (ETS); TTUHSC's institutional code is 6851. TOEFL scores are valid for only two years. Due to the limited time frame regarding accessing test scores, if TTUHSC has received a test score that is over two years old, we will accept it as official.

**IELTS** International English Language Testing Service - The minimum IELTS required score is an overall band score of 6.5 on the Academic version; IELTS General Training results are not acceptable. There is no IELTS institution code for TTUHSC. IELTS scores are valid for only two years. Due to the limited time frame regarding accessing test scores, if TTUHSC has received a test score that is over two years old, we will accept it as official.

**Duolingo English Test** (Online examination) The minimum requirement Duolingo score is 100. There is no institutional code for Duolingo and scores are reported within 48 hours and are valid for two years. Due to the limited time frame regarding accessing test scores, if TTUHSC has received a test score that is over two years old, we will accept it as official.

**PTE Academic** (Pearson Test of English Academic; PTE Academic) The minimum required PTE Academic score is 60. PTE General and PTE Young Learners results are not acceptable. There no PTE Academic institution code for TTUHSC. PTE Academic scores are valid for only two years. Due to the limited time frame regarding accessing test scores, if TTUHSC has

received a test score that is over two years old, we will accept it as official.

**Cambridge CPE** (Cambridge Certificate of Proficient in English; CPE) The minimum required Cambridge CPE grade is C. There is no institutional code for the Cambridge CPE. The Cambridge CPE is valid for life.

**Cambridge CAE** (Cambridge Certification of Advanced English; CAE) The minimum required Cambridge CAE grade is B. There is no institutional code for the Cambridge CAE. The Cambridge CAE is valid for life.

English Proficiency Testing Waivers and Country Specific Exemptions:

- Applicant attended four (4) consecutive long semesters of credit-bearing/non-development/non-ESL courses at an accredited post-secondary school in the U.S.
- Attended two (2) consecutive years of high school in the United States.
- Attended two (2) consecutive years of high school with U.S. accreditation or within an English proficiency exempt country
- Applicants from the below English Proficiency exempt countries (must provide proof with passport):

American Samoa	Anguilla
Antigua and Barbuda	Australia
Bahamas	Barbados
Belize	Bermuda
Canada (except the Province of Quebec)	Cayman Islands
Dominica	Falkland Islands (Islas Malvinas)
Ghana	Gibraltar
Grenada	Guam
Guyana	Ireland, Republic of
Jamaica	Liberia
Micronesia Islands, Federated States of	Monsterrat
New Zealand	Nigeria
Saint Kitts and Nevis	Saint Lucia
Saint Helena	South Africa
St. Vincent and the Grenadines	Trinidad and Tobago
Turks and Caicos Islands	United Kingdom: (England, Scotland, Northern Ireland and Wales)
United States	Virgin Islands
Zimbabwe	

Official Transcripts:

Academic Credentials: All prospective students applying to the Graduate School of Biomedical Sciences are expected to adhere to the highest level of academic integrity. This includes entering all post-secondary institutions attended or currently attending on the application for admission, including institutions for which transfer credit was received toward an undergraduate or graduate degree. Applicants must also submit official U.S. transcripts or course-by-course transcript evaluations for international institutions for all institutions attended and/or currently attending. Failure to provide this information on the application or not providing all U.S. transcripts or course-by-course transcript evaluations with all academic credentials is considered a falsification of academic records and will result in the admission application being voided.



- a. 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 and typically requires at least 120 U.S. equivalent credit hours. Applicants must submit an official transcript from each U.S. college or university attended. All degrees earned must appear on official transcripts.
- b. International applicants must provide a course-by-course transcript evaluation of all coursework taken at degree-granting institutions recognized by their government/governmental ministry. An international 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 study. Consideration may then be given for admission upon 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 a U.S. bachelor's degree equivalent, 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 to be eligible for admission consideration. The applicant must be in good standing with all schools attended. An international applicant must provide official transcripts from attendance at any U.S. university. Texas Tech University Health Sciences Center requires course-by-course transcript evaluations and diploma information from the list of services provided on the online application. Do not send international transcripts and marksheets to Texas Tech University Health Sciences Center.
4. **Reference letters:** Applicants must submit names and email addresses of at least two recommenders using the online application system, and no more than four within the application. Recommenders are sent a link to the form and upload their recommendation letter.
  5. **Immunization record:** All applicants are required to provide proof of: two immunizations for varicella (chicken pox) or a titer proving immunity, two immunizations of measles, mumps, and rubella or a titer proving immunity; 2-step tuberculosis skin test; 3 doses of the hepatitis B-series or a titer proving immunity; Tetanus/diphtheria (Td) within the last ten years; Tdap (Tetanus, Diphtheria, and Acellular Pertussis): Adult (one time dose starting year 2005); Meningococcal Vaccine (MCV): Adults 22 and younger (vaccine within the last 5 years). A current Flu vaccine (applicable through October thru March). Refer to the immunization form on admission application website for more information. Applicants must submit the **immunization form** with a copy of the immunizations record or physician's letter at least 10 business days prior to the start of the semester. Provisions for immunization requirements and implementation procedures for all TTUHSC employees, volunteers, and students are covered under HSC OP 75.11.
  6. **Bank Statement and Sponsor Financial Affidavit/Statement:** International F1 applicants are required to submit a bank statement from an account(s) belonging to the applicant and/or applicant sponsor showing a minimum of \$39,220 USD or equivalent available balance, which is the estimated amount for one year of tuition/fees and living expenses. Spouse is an additional \$6,649 and each child is an additional \$4,422. If the applicant has a sponsor, we also require a financial statement letter from the sponsor stating their intent to financial support the applicant. Documents may be uploaded to the supplemental item associated with the application or emailed to **graduate.school@ttuhsc.edu**.
  7. **Oath of Residency:** All applicants must complete an Oath of Residency form provided through the online application
  8. **Essay:** All applicants must submit a written essay through the online application.
  9. **Application Fee:** A one-time nonrefundable application fee for graduate study (currently \$45 for both domestic and international applicants). Application fee waivers are available for:
    - Applicants who spoke to a GSBS representative and provided contact information at any of these events (ABRCMS, SACNAS, HACU, NCUR)
    - McNair Scholars (requires documentation from institution)
    - Attendees at the annual GSBS Open House
    - Attendees who spoke to a GSBS representative at a grad fair and contact information for the applicant was obtained at the event
    - Participants in our summer internship programs ABRI or SABR
    - Current GSBS students
    - U.S. active duty military, U.S. military veterans
    - Applicants offered and who accepted admission but deferred admission to a later term and with approval by the program/concentration admissions committee (application fee waiver is only valid once for deferrals)
    - Texas Tech University and Texas Tech University Health Sciences Center full-time staff (excluding faculty)
    - At the discretion of the Senior Associate Dean (under very limited circumstances). Please email **graduate.school@ttuhsc.edu** for more information.
  10. **Passport:** A copy of an international applicant's passport assists in processing the I-20.

11. Placement Fee: A \$50 placement guarantee fee is required upon an offer of admissions.
12. VISA: International students in a degree-seeking program are required to have an F1 visa. Most employment visas require course work to be incidental to employment and such visas are generally not acceptable for most of our degree programs. Prospective students who are considering a visa change are encouraged to seek the advice of an immigration attorney with any concerns.
13. SEVIS – International students, exchange visitors and scholars attending school or conducting research in the United States are required to pay a SEVIS fee prior to obtaining their visas. The fee is associated with the Student Exchange and Visitor Information System (SEVIS) and took effect September 1, 2004. The SEVIS fee is not reimbursable by TTUHSC.

Application files will not be evaluated until all the above requirements have been met. Applicants will be notified when an admission decision has been made. Three general categories of criteria are used to evaluate all applicants for admissions:

1. Academic records: All academic records may be considered.
2. Test Scores: Scores on the General Test of the Graduate Record Examination (GRE). Each score is considered separately with percentile scores viewed by broad major.
3. Individual Profile: Profiles may include recommendations, research background, motivation, multilingual proficiency, undergraduate institution, presentations, portfolios, and interviews. Admission committees may also consider work experience, demonstrated commitment to a particular field or study, and community involvement.

#### Clery Annual Security Report

Every year in October, Texas Tech University Health Sciences Center releases the Annual Security Report in compliance with the federal law identified as the "Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act."

The report contains statistics about certain specified crimes and related incidents that have been reported to the Texas Tech Police Department and other campus security authorities for the previous three calendar years. The report also contains policy statements pertaining to campus security, crime or emergency reporting options, emergency response information, and crime prevention for TTUHSC campuses.

Click [here](#) to download the annual security report.

To request a paper copy of this report, contact the Texas Tech Police Department by email at [police@ttu.edu](mailto:police@ttu.edu) or by phone 806-742-3931 during normal business hours, 8 a.m. - 5 p.m., Monday through Friday.

# Enrollment

Students who have been granted admission to the GSBS are expected to register for course work whether or not they contemplate degree work. Failure to register in the term for which admission is granted will require the student to reapply for admission.

## Registration

Registration information is provided during new student orientation prior to the beginning of the Fall semester. Graduate students are permitted to register at any time beginning the first day of advance registration. Online registration is available to all admitted students. Instructions for registration and add-drop procedures can be found on the **registrar's website**.

Students are required to register for appropriate courses in every semester (including summer) in which they expect to receive assistance, use the facilities of the university, or take comprehensive examinations.

The number of hours for which students must enroll in each semester depends on their level of involvement in research and their use of university facilities and faculty time. Students in residence who are devoting full-time to research should enroll for 9 to 12 hours.

## Registration by Undergraduates

With the exception of participants in approved early acceptance programs, undergraduate students may not enroll for courses carrying graduate credit unless they are within 12 hours of graduation and have at least a B average in their major subject. The **Approval for Graduate Credit** form must be approved by the GSBS Office prior to registration. Courses taken without this approval will not be granted graduate credit. With the approval of the GSBS Office, students may take graduate courses for undergraduate credit.

The maximum amount of work that may be scheduled by an undergraduate who is taking courses for graduate credit is 16 hours in a semester or 6 hours in the summer term, including graduate and undergraduate work. Undergraduates permitted to enroll for graduate courses are expected to receive their bachelor's degree within one year of the first semester of graduate enrollment.

With the exception of participants in approved early acceptance programs, an undergraduate may not receive credit for more than 12 semester hours of GSBS coursework completed prior to admission to the Graduate School of Biomedical Sciences as an applicant for a graduate degree.

## Registration by Faculty and Staff

Full-time members of the faculty and staff of Texas Tech University or Texas Tech University Health Sciences Center (TTUHSC) may enroll for courses by permission of the course director, and by completion of the GSBS application. In registering for graduate work, they become subject to the regulations of the Graduate School of Biomedical Sciences. However, no member of the faculty who has held rank higher than instructor at TTUHSC is eligible to pursue a graduate degree program at this institution unless prior approval of the GSBS Office is given. TTUHSC Employees may also utilize the tuition assistance program as outlined in OP 70.47 to receive tuition waivers for one course per semester. To be eligible, employees must be full-time benefits-eligible and seeking a degree or certification.

# General GSBS Requirements

## Interprofessional Practice and Education (IPE) Core Curriculum

All TTUHSC students, regardless of school affiliation, will be required to complete the IPE core curriculum prior to graduation. The IPE core curriculum is composed of two components including successful completion of a non-credit online course (>70% accuracy on the knowledge post-test) and successful participation in at least one registered IPE learning activity. Failure to complete the IPE core curriculum will result in delayed graduation.

## Ethics/Responsible Conduct of Research (RCR) Course

All GSBS students are required to complete a course in ethics (Responsible Conduct of Research).

## Waiving Requirements

Each program/concentration has specific requirements of graduate students outside the general requirements of GSBS. Graduate students may petition to waive a specific requirement (a course) if the student has taken a similar course; however, GSBS 5174 and GSBS 5275 will not be waived. Approval for waiving requirements is considered within each academic area. General guidelines for this process are as follows (check with the graduate advisor for specific guidelines):

1. The student petitions their graduate advisor in writing, describing the course he or she wishes to waive and the pertinent details

on the course previously taken (the course must have been completed within a certain amount of time as determined by the faculty within the academic area).

2. The student must provide an original transcript from the previous institution clearly displaying that the course was taken and satisfactorily passed with a "B" or better.
3. The student must also provide a complete syllabus for the previously taken course in order for the graduate advisor to determine if the content of the course is substantially similar to the course in which a waiver is being requested.
4. For courses outside the core curriculum, the graduate advisor will present all of this information to the CCC committee or program/concentration faculty who will decide if the request is to be granted or denied.
5. In cases where the graduate faculty committee cannot decide the appropriateness of the request, they may require the student to take and pass a comprehensive examination on the contents of the course.

Courses that are waived do not reflect on the student's HSC transcript nor do the credit hours count toward the degree.

Documentation for waiving a course will be maintained in the GSBS office.

## PROBATION AND DISMISSAL

GSBS students are required to maintain a minimum overall grade point average (GPA) of 3.0. If a student fails to maintain the required minimum GPA, she or he will be placed on academic probation. Refer to program guidelines for specific guidance.

## TUTORING.

Group tutoring is available through the GSBS. Once tutoring dates have been scheduled, the GSBS will notify students. Some group tutoring is also available and conducted by course directors or organized through the graduate student association (GSA).

## OTHER REQUIREMENTS

All GSBS students are required to take the ethics course (GSBS 5101, Responsible Conduct of Research) and GSBS 5000 Interprofessional Collaborative Practice. Most programs/concentrations also have a statistics course requirement; GSBS offers the GSBS 5310 Introduction to Statistical Methods course, though other courses may meet the requirement.

# General Information

## Registration Without Credit (Auditing)

Persons who wish to audit a course for no grade must obtain written permission from the GSBS Office and the instructor using the **Permission to Audit Course without Credit** form. Those who audit a course do so for the purpose of hearing or seeing only and will not receive a grade or credit in the course. Students auditing a course will not be listed on the class roll, will not participate in exams, and no notation of the audit will be made on the student's transcript.

## Transfer Credit

There is no automatic transfer of credit from another university toward a graduate degree within the Graduate School of Biomedical Sciences. In general, all such work is subject to review and approval by the graduate advisor within the academic area and by the GSBS Office. No work completed with a grade of less than B will be considered (a grade of B is defined by the numerical range 80-89) and no more than 30 hours of an earned Master's degree from another institution may be transferred. All students must submit an official U.S. transcript and syllabus for each course along with the request for transfer at the time the degree plan is submitted to the GSBS office.

Students may petition for approval of a graduate level course taken at another institution to satisfy a program/concentration requirement by providing documentation that the course is equivalent to a GSBS course which satisfies the requirement. The request to substitute a course should be submitted to the graduate advisor in the first semester after matriculation. If approved by the graduate program committee, the request will be forwarded to the GSBS Office for final approval.

Experiential credit is only approved in advance for matriculated GSBS students who may spend a semester learning research techniques in an approved laboratory outside of the institution and this must be requested in writing to the GSBS Office on a case-by-case basis. For credit to be awarded the GSBS Office will determine how much credit may be earned and it will be awarded under a Special Topics course number.

Graduate credit is not granted for courses taken by correspondence.

## Full-Time Study.

GSBS semesters are 15 weeks (45 contact hours for a 3 semester-credit-hour course). **The general rule is that a student may not earn more than 1 hour of credit for each week of the enrollment period.** Any exceptions to this rule must have the prior approval of the GSBS Office. Students on fellowships, assistantships, or other appointments designed for the support of graduate study must meet full-time enrollment requirements each semester. The following table details full-time registration requirements for doctoral,

masters, and temporary students.

	Doctoral Students		Masters and Temporary Students	
Term	Minimum Enrollment	Maximum Enrollment	Minimum Enrollment	Maximum Enrollment
Fall	9 credit hours	13 credit hours	9 credit hours	16 credit hours
Spring	9 credit hours	13 credit hours	9 credit hours	16 credit hours
Summer	6 credit hours			

If a student is devoting full time to research, using university facilities and faculty time, the schedule should reflect at least 9 hours enrollment (6 hours in the summer term).

Registration in an individual study, research, or similar course implies an expected level of effort on the part of the student comparable to that associated with an organized class with the same credit value.

A doctoral student not on campus who is required to register solely for the purpose of satisfying a continuous enrollment requirement need not register for more than 1 credit hour during each term (a doctoral student not on campus who is involved in internship, research, or another type of academic study should register for credit hours in proportion to the teaching effort required of the graduate faculty).

**Changes in Schedule and Withdrawal.** A graduate student who wishes to add or drop a course must initiate such action with their graduate advisor. Students should follow the academic calendar for deadlines associated with add/drop and withdrawing from a course. A student who no longer attends a course without an official withdrawal will receive an F in that course.

**Transferring within GSBS Programs/Concentrations.** Students who wish to change their academic area – that is, transfer from one program/concentration to another within GSBS – should first notify their current graduate advisor of their intent to transfer. Once notification has been given, the student should contact the graduate advisor of the new program or concentration they wish to enter. If the program/concentration is willing to accept the student, the student should have the new graduate advisor approve the transfer by signing the Application for Change in Major form. Once the form has been signed by the new graduate advisor, the form must be approved by the GSBS Office.

Students can change their academic major at any time during a term; however, it will not be effective until the beginning of the following term. Only students in good standing may transfer into another academic area within GSBS. Students who have been dismissed may reapply to another graduate program through the application process; however, they are not eligible to utilize the Application for Change in Major form.

**Maximum Allowable Graduate Hours.** Students not making timely progress toward completion of a graduate degree are subject to termination by the GSBS Office. The Texas Legislature has capped formula fundable graduate hours and imposed sanctions upon universities permitting registration for excess hours. Doctoral students beyond the maximum allowable graduate hours as determined by the Texas Legislature (129 hours) may be required to pay out-of-state tuition, regardless of residence status. The GSBS Office must approve exceptions or extensions in advance. (See 129 Hour Rule).

**Scholarships.** The Graduate School of Biomedical Sciences (GSBS) seeks to continually recruit and retain the best quality students. In support of that goal, GSBS offers various scholarships throughout the year. Information about all GSBS scholarships can be found on the Scholarships page of the GSBS website. **Please note, students must be in good academic standing and have a FAFSA or TASFA on file with financial aid to receive scholarships.**

## Expectations of Professionalism

**Professionalism Statement.** All Students must adhere to the TTUHSC Student Handbook Code of Professional Conduct. Students are expected to conduct themselves in a professional manner in all interactions with TTUHSC students, faculty, staff, guests, and administration. Though not exhaustive, examples of unprofessional conduct include: late tuition payment; disrespectful email communication, including failure to respond to email communications; or obstructive or disrespectful behavior in the classroom, laboratory or workplace.

**Responsibility of Students.** Each graduate student is expected to become thoroughly familiar with academic guidelines, Graduate School of Biomedical Sciences regulations, and degree requirements. Failure to follow the regulations and requirements may result in disciplinary action.

**Annual Review.** The Graduate School of Biomedical Sciences requires faculty to conduct a formal review of their students' progress at least once a year. The **"Record of GSBS Committee Meeting Form"** should be filed with the GSBS office within 7 days of the meeting. Along with the form, the student's committee minutes may also be provided as proof of the meeting. Any student not making satisfactory progress toward the degree may be placed on probation and given conditions to stay in the GSBS program. Continued unsatisfactory progress in any area of a student's work will be cause for dismissal.

**Attendance.** Whenever attendance and/or participation forms a basis for a portion or all of a course grade, students must be provided with explicit written information (within the course syllabus) during the first week of classes. Such information shall be 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 university policies. The Graduate Student Association and the Student Government Association offer many opportunities for participation. Students are also encouraged to participate in the annual Student Research Week during the first week of March. This consists of three consecutive days of poster competitions and guest seminars. Faculty will not hold classes or exams (unless an exception has been granted prior to the beginning of the Spring semester, by the GSBS Dean) during this week so that all GSBS students can participate and gain experience presenting a poster. Off-campus sites will make reasonable accommodations so that GSBS students on distant campuses may also participate.

**Leave of Absence.** Any student who fails to register for three consecutive semesters (12 months) and who does not have an official leave of absence from study is subject to review for readmission by the standards in effect at the time of reconsideration. Official leave of absence, which is granted by the GSBS Office upon recommendation of the graduate advisor or advisory committee Chair, may be granted only in cases of serious medical conditions and other exceptional reasons. Normally, leaves of absence will not exceed one year. Leaves of absence do not extend the maximum time allowed for completion of the degree.

**TTUHSC Electronic Mail.** To facilitate communications, GSBS solely utilizes the TTUHSC- assigned e-mail account (i.e. first.last@ttuhsc.edu). It is the student's responsibility to check this account for important information and notifications.

**Computers.** A number of GSBS courses require a laptop computer and therefore it is strongly recommended that all incoming students obtain an appropriate laptop computer. You can see recommended configurations requirements page [here](#).

**CV Maintenance.** Students are required to maintain a current CV including scholarly activity such as publications and poster presentations. Doctoral students are provided with a Digital Measures account for entering and organizing CV information. Masters students receive an annual CV submission request.

## Grades

The grades used in the Graduate School of Biomedical Sciences (GSBS) are: A, B, C, D, and F. All grades are used in computing grade point averages. Instructors may NOT choose to add a plus or a minus to the grade. Graduate credit is given for courses completed with grades of A, B, and C; however, individual program/concentrations may require a student to retake courses in which a "C" was obtained.

Graduate faculty have the option to use pass-fail grades (P and F) for individually arranged courses, professional seminars, and certain other courses. Student committees and/or the advisor (if student committees have not been established) may approve graduate students to take elective courses as pass-fail, however, no more than one-fourth of a student's course work may be graded pass-fail.

Students wishing to take a course pass-fail must get approval from their committee and notify the GSBS office prior to registering for the course. A student must declare the intent to take a course pass-fail no later than the last day on which a grade of W is automatically given for courses dropped. A student who has chosen to take a course pass-fail may not subsequently change to a letter-graded basis. Graded courses that students elect to take pass-fail will be converted using the following scale: A, B = Pass; C, D, and F = Fail. A grade of F received on a course taken pass-fail will be computed into the grade point average. The names of students

taking a course pass-fail will not be made known to the instructor.

The graduate faculty within the program/concentration in which the major will be declared will decide whether courses taken under the pass-fail system will count toward satisfying the degree requirements.

**Grading Symbols CR, I, W, and WF.** The symbol "CR" (credit) is normally assigned for every enrollment in a master's thesis or doctor's dissertation section until the completed document has been approved by the student's committee and accepted by the GSBS Office. At that time a letter grade will be entered for the final enrollment. Faculty may elect to grade the last 6 hours of thesis (12 hours of dissertation) by preparing a grade change form if a portion of those hours were taken in a previous semester.

"CR" may be given by a professor when a student's work in other individual research courses is not completed but is satisfactorily in progress at the end of a semester. When the research is completed, a standard letter grade should be entered for the final semester.

The symbol "I" (incomplete) is 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 used as a substitute for an F. **Only the Registrar's office can enter a grade of "I". The course director must complete the Grade of Incomplete form which requires the student, instructor, Chair or Advisor, and GSBS Dean signatures.** The assigned work must be completed and a change of grade must be recorded within one calendar year from the date the I was recorded. Failure to do so will result in the Registrar's Office assigning an F for that course and will cause it to become ineligible for a grade change.

A grade of "In Progress" (PR) is given only when the work for a course extends beyond the semester or term. It implies satisfactory performance. Assigned work must be completed and a change of grade must be recorded by the end of the following term from which the PR was assigned. Failure to do so will result in the school requesting either a "Failure" (F) or an Incomplete (I) be assigned by submitting a Change of Grade Form and submitting to the Registrar's office.

When a student officially withdraws from a course by the specified date early in the term, a grade of "W" (withdraw) will be assigned. A withdrawal after the specified date will result in a grade of "W" or "WF" (withdraw/fail), according to the assessment of the student's work in the course up to the time of the official withdrawal. A student who no longer attends a course without an official withdrawal will receive an F in that course. The grade of "W" does not affect GPA, but "WF" is calculated into the GPA.

## Academic Probation Policy

**Purpose:** To ensure understanding of the academic performance standards set forth by the GSBS.

Every student enrolled in the Graduate School of Biomedical Sciences (GSBS), whether working toward a degree or not, is required to maintain a high level of performance and to comply fully with policies of the institution. The GSBS reserves the right to place on probation or to dismiss any graduate student who does not maintain satisfactory academic standing or who fails to conform to the regulations of TTUHSC.

1. If a student's graduate GPA for a particular semester falls below 3.0, the student will be placed on academic probation. The student must make a 3.0 GPA or better in each subsequent semester in which he or she is enrolled. Failure to maintain a 3.0 GPA in each succeeding semester, may result in academic dismissal from GSBS. Regulations governing scholastic probation are based on semester grade-point averages and will be applied regardless of overall grade- point average.
2. Academic programs or concentrations may apply standards for probation and suspension higher than those established by the Graduate School of Biomedical Sciences. Such standards are to be approved by the GSBS Office, and actions based thereon are to be recommended by the graduate advisor and forwarded to the GSBS Office. Program and concentration specific standards can be found in the guidelines for each program and concentration.
3. The minimum requirement for graduation is a cumulative GPA of 3.0 in all courses taken for graduate credit, exclusive of the credits for the thesis/dissertation.

Students that are placed on academic probation will lose their tuition & fee scholarships for the semester immediately following the semester that they are placed on academic probation. The student must make a 3.0 GPA or better in the semester that the scholarship is forfeited to regain the tuition & fee scholarship. Students on academic probation will not be eligible for scholarships.

**Any student who has been suspended must appeal to the GSBS Office if reinstatement is desired. Refer to the Complaint Policy for specific details and procedures.**

Students who have been dismissed must appeal to the GSBS if reinstatement is desired. Procedures to appeal academic dismissal are found in the Complaint Policy. A student may also be dismissed for unprofessional conduct such as cheating or plagiarism. Appeals for this type of dismissal are subject to the provisions under the Code of Student Conduct. See the TTUHSC **Student Handbook** and the Dismissal Policy for further information.



# DISMISSAL POLICY

**Purpose:** To outline conditions or circumstances that may provide sufficient cause for dismissal of graduate students.

The following conditions or circumstances may provide sufficient cause for dismissal of a student from the Graduate School of Biomedical Sciences.

Graduate students who:

- do not make adequate academic progress as defined by the program/concentration guidelines;
- do not maintain an acceptable GPA as defined by the Academic Probation Policy
- engage in academic or research misconduct;
- engage in illegal, fraudulent, or unethical behavior as defined in the **Student Handbook** - Code of Professional Conduct;

There may also be other unusual situations in which a student may be dismissed. In each case, the dismissal should follow the following procedures:

## Lack of Adequate Academic Progress

Failure to maintain an acceptable GPA will result in academic warning, probation or dismissal according to the GSBS Academic Probation policy. In addition, students who have not been placed on probation, but who are not making adequate academic progress, must be warned in writing of the possibility of dismissal. They will be given a clear statement about what must be done within a specified time period to alleviate the problem. These expectations must be reasonable and consistent with expectations held for all students. If the student does not meet the requirements within the time frame specified, he/she may be dismissed. Upon recommendation from the graduate advisor, the GSBS Office will notify the student of his/her dismissal. Students may appeal this dismissal following the procedures outlined in the Complaint Policy.

## Academic or Research Misconduct/Illegal, Fraudulent, or Unethical Behavior

The process for dismissing students as a result of academic or research misconduct; or as a result of illegal, fraudulent, or unethical behavior is outlined in the **Student Handbook** - Code of Professional Conduct.

Allegations of scientific misconduct (fraud, dishonesty, scientific misconduct, or misconduct in science) will be investigated by the TTUHSC Research Integrity Officer as outlined in HSC OP 73.07 Honesty in Research & Allegations of Scientific Misconduct. Scientific misconduct is defined as fabrication, falsification, plagiarism, or other practices that materially deviate from those that are commonly accepted within the scientific and academic communities for proposing, conducting, or reporting research. It also includes other material deviations from accepted scientific practices such as failure to report unethical research practices, obstruction of another's research, violation of confidentiality, intentional deception, omission or research dishonesty, repeated incidents of regulatory noncompliance and misuse of research funds. It does not include honest errors or honest differences in interpretations or judgments of data.

## Other Situations

A regularly admitted graduate student who has not been registered for three consecutive semesters (including the summer term) will be dismissed unless a leave of absence has been approved.

Any student who does not complete all requirements for a graduate degree within the time limit will be dismissed.

Graduate Degree Time Limits		
	Years	Credit Hours
Masters	6	99
PhD	8	129

Graduate Advisors may recommend dismissing students for situations other than those specified above. When doing so, the graduate advisor must notify the student in writing of the possibility of dismissal. If it is possible for the student to rectify the situation, he/she must be given a clear statement about what must be done within a specified time period to alleviate the problem. These expectations must be reasonable and consistent with expectations held for all students. If the student does not meet the



requirements within the time frame specified, he/she may be dismissed.

If the situation cannot be rectified, the graduate advisor will send justification for the dismissal to the GSBS Office. If warranted, the GSBS Office will notify the student in writing of the grounds for dismissal and the date when the dismissal will be effective. This will normally be the end of the semester in which the student is enrolled, but the circumstances of the dismissal will be important in determining this date.

Students may appeal their dismissal by following the procedures outlined in the **Student Handbook** - Code of Professional Conduct.

## Complaints

This section covers two areas of complaints: Grade Appeals and Non-Grade Grievances. It is the policy of Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences to affirm the right of its students to a prompt and fair resolution of a complaint or grievance.

### Grade Appeal

**Purpose:** To provide the student with a safeguard against receiving an unfair final grade, while respecting the academic responsibility of the faculty.

This policy recognizes that:

- Every student has a right to receive a grade assigned based on a fair and unprejudiced evaluation of the student's performance using a method that is neither arbitrary nor capricious; and,
- Faculty have the right to assign a grade based on any method that is professionally acceptable, submitted in writing to all students, and applied equally.

The following procedure provides students with a system by which to file an appeal of a final grade they believe was based on arbitrary or capricious action by the faculty. Only the final course grade as entered into the official TTUHSC system may be appealed. The burden of proof that such an influence has affected a final grade rests with the student.

*\* Throughout this document, the phrase "business days" refers to days when the Graduate School of Biomedical Sciences administrative offices are open, and excludes weekends and holidays.*

**Prior to filing an official grade appeal, the student must meet with the course director to review how the faculty arrived at the final grade. If after the meeting with the faculty the student wishes to pursue filing a final grade appeal, the following procedures shall be followed.**

#### A. GRADE APPEAL

1. Students must file a **Grade Appeal Form** within three (3) business days of the date the final grade is posted in Banner. The Grade Appeal Form is to be filed with the GSBS Office. All documents to support the appeal must accompany the Grade Appeal Form. Documents received after the log-in date of the Grade Appeal Form will not be accepted.
2. The GSBS Office will forward the appeal and all supporting documents to the appropriate programmatic graduate advisor/program director. Note: If the course director is also the graduate advisor/program director, the appeal will go directly to the GSBS Assistant Dean.
3. The Graduate Advisor/Program Director shall meet with the faculty and student separately and review all materials pertinent to the grade appeal.
4. After review of all materials, the Graduate Advisor/Program Director shall, within five (5) business days from receipt of the formal grade appeal, render a decision. The student shall be notified of the decision via electronic correspondence to the student's TTUHSC email address. A copy of the decision is forwarded to the GSBS Assistant Dean. The grade appeal decision is deemed received by the student when received electronically by the student at his/her TTUHSC email address. It is the student's responsibility to keep the university advised of any change in contact information such as email or mailing address.
5. If the student is not satisfied with the decision of the Graduate Advisor / Program Director, she/he may appeal to the GSBS Assistant Dean by submitting a detailed written explanation setting forth each and every reason why she/he believes the grade is unjust. Any reason not set forth in writing will not be considered. Such explanation must be submitted within two (2) business days from the receipt of the written decision of the Graduate Advisor/Program Director. The Assistant Dean will review the written responses from the student, Course Director and the Graduate Advisor/Program Director. The Assistant Dean must provide a written response to the student via TTUHSC student email account within two (2) business days from receipt of the appeal. The decision of the academic substantive review by the GSBS Assistant Dean is final.
6. All records related to the appeal are retained by the GSBS office for a period of three (3) years.
7. The student may only appeal issues of procedural due process to the GSBS Sr. Associate Dean.

#### B. PROCEDURAL APPEAL

1. The student may file an appeal on procedural grounds following receipt of the final decision on the appeal of the grade. A

procedural appeal should be filed with the GSBS Office within two (2) business days of the student receiving the GSBS Assistant Dean's decision on the grade appeal. A memo stating justification for the procedural appeal should be emailed to the Sr.

Associate Dean.

2. Upon review of all materials and meeting with the student, graduate advisor/program director, assistant dean and course director, the Sr. Associate Dean shall render a decision on the procedural appeal within three (3) business days from receipt of the procedural appeal.
3. The decision of the Sr. Associate Dean will be sent to the student via electronic correspondence to the student's TTUHSC email address. The decision of the Sr. Associate Dean is final.
4. All records will be retained by the GSBS office for 3 years.

### **Non-Grade Grievance Policy**

**Purpose:** To define the process for students to resolve and/or file a complaint regarding all academic issues except for Academic Dishonesty (see the **Student Handbook** - Code of Professional Conduct.)

It is the policy of the Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences to affirm the right of its students to a prompt and fair resolution of an academic complaint or grievance. The Student Hearing committee will administer the GSBS's policies regarding student grievances and will insure that due process is afforded to all concerned.

All student disciplinary hearings are closed, and for purposes of release of information regarding such hearings, such information is protected from public disclosure as allowed by law.

#### **PROCEDURE (Non-Grade Complaints):**

##### A. Early Resolution

1. Prior to filing a request for a hearing, the student must attempt to resolve the issue with the individual(s) involved.
2. If not satisfied with the outcome of the effort described in item 1, the student must contact the Graduate Advisor/Program Director. The graduate advisor/program director will investigate the complaint, attempt to reconcile differences, and find an acceptable solution. (If the grievance is against the graduate advisor, the student should contact the Department Chair).

*If the complaint originates in Amarillo or Abilene the student must contact the regional Associate Dean. A complaint against the Regional Associate Dean should be filed with the Sr. Associate Dean.*

If not satisfied with the outcome of the first two efforts, the student must contact the Assistant Dean. The Assistant Dean will investigate the complaint, attempt to reconcile differences, and find an acceptable solution. The Assistant Dean will provide a written statement of his/her recommendation to all parties, who will then have ten (10) business days\* to respond. (If the grievance is against the Assistant Dean, the student should contact the Sr. Associate Dean). If the grievance is satisfactorily resolved by any of the above discussions, the terms of the resolution shall be reduced to writing and signed by the graduate student, respondent, and administrative superior involved in negotiations. Every effort should be made to resolve the issue without going beyond this level.

##### B. Formal Complaint

1. If the student is not satisfied with the Assistant Dean's recommendation, he/she may pursue the matter further by contacting the Sr. Associate Dean. The grievance must be submitted to the GSBS Office within twenty (20) business days from the time that the graduate student knows of the matter prompting the grievance, or the graduate student relinquishes any opportunity to pursue the grievance. The grievance must include a specific statement of the student's complaint, a clear and concise statement of the policy or procedures violated, an explanation of what remedy the student seeks, and a copy of the Assistant Dean's recommended resolution.
2. The Sr. Associate Dean will attempt to resolve the appeal within ten (10) business days through conferencing with the respondent and student appellant. If not resolved within 10 business days, the Sr. Associate Dean will appoint a Hearing Committee that will consider the appeal.
3. If a Student Hearing committee is appointed, they must convene within thirty (30) business days.
4. The Sr. Associate Dean will forward the request for a hearing to the appropriate faculty member who has been appointed by the Dean to serve as the Chair of the Student Hearing committee.

##### C. Student Pre-Hearing Procedure

1. Grievances shall be heard by the GSBS Student Hearing committee, which shall be composed of members of the GSBS Graduate Faculty:  
One faculty member who is appointed by the GSBS Dean to serve as chair;  
Two students from programs/concentrations not directly involved;  
Two faculty members from programs/concentrations not directly involved;  
The GSBS Dean will appoint an administrative staff person to take minutes of the meetings. This staff person will not be a voting member. Both parties can petition to have individuals selected to the Student Hearing committee.
2. At least fifteen (15) business days prior to the student hearing, the Chair of the Student Hearing committee will provide written notice to the parties of the following:
  - a. Date, time and place for the hearing,
  - b. Name of the members of the Student Hearing Committee
  - c. Summary statement of the Hearing Request(s) and respondent's response.

3. Either party may challenge in writing the impartiality of any member of the Student Hearing Committee up to three (3) business days after receiving the Hearing Notice by submitting their reasons for the challenge to the Chair of the Hearing Committee.

Any member of the Student Hearing committee whose participation is challenged shall be required to establish to the Chair of the Student Hearing committee that the member can serve with fairness and objectivity. If the member cannot establish his or her fairness and objectivity to the satisfaction of the Chair of the Student Hearing Committee, the member in question shall be removed and a substitute will be appointed by the GSBS Dean.

4. At least seven (7) business days prior to the student hearing, all parties will provide to the Chair of the Student Hearing Committee:
  - a. A copy of all written supporting documentation that the party will present at the hearing
  - b. A list of witnesses to be called by the party. Each party is responsible for ensuring that witnesses are at the hearing, and
  - c. The name of any advocate who will accompany the party to the hearing and whether the advocate is an attorney.

The Chair of the Student Hearing Committee will provide all such information to the hearing committee at least five (5) days before the hearing.

5. A student hearing will be conducted in closed session. Any request for an exception must be submitted in writing to the Chair of the Student Hearing Committee, who shall render a final written decision.

#### D. Hearing Procedure

1. Both parties shall attend the hearing and be offered an opportunity to state their positions, and present testimony and other evidence relevant to the case. The responsibility of establishing the validity of the grievance shall rest with the student. The evidence shall be presented by the graduate student and then by the respondent.
2. The student may have an advisor present at the hearing. The advisor must be a member of the TTUHSC community. However, if the student is also the subject of a pending criminal investigation, indictment or charge arising out of the same circumstances, he or she may be allowed to have an attorney serve as his or her advisor, at his or her own expense, to participate in the same manner as any other advisor. If an advisor for the student is an attorney, an attorney from the Office of General Counsel shall attend the Student Hearing on behalf of the Health Sciences Center. The Health Sciences Center will provide legal counsel for the student hearing if the Student Hearing Committee Chair deems it necessary.
3. The student is responsible for presenting her or her own information, and therefore, advisors are not permitted to speak or to participate directly in any student hearing before the Student Hearing Committee. A student should select as an advisor a person whose schedule allows attendance at the scheduled date and time for the student hearing, as delays will not be allowed due to the scheduling conflicts of an advisor, except at the discretion of the Student Hearing Committee Chair upon written request seven business days in advance of the date scheduled for the student hearing.

Members of the Student Hearing committee may question all witnesses, followed by the parties. Questioning by both parties may be limited by the sole discretion of the Chair of the Student Hearing Committee for such issues as preserving the civility of the hearing, avoiding redundant and irrelevant questioning, and/or providing for the efficient administration of the hearing. Witnesses are permitted to attend the student hearing only during the time they are providing testimony, or are being questioned by either party or the committee unless the Student Hearing Committee Chair, in his/her sole discretion determines otherwise.

4. Both parties may arrange for witnesses to present pertinent information to the Student Hearing Committee. Both parties are responsible for arranging for the voluntary attendance of his or her own witnesses.
5. In its sole discretion, the Student Hearing Committee may call other witnesses not identified by either party. If prior to the hearing the Student Hearing Committee anticipates calling additional witnesses, the committee shall notify the Student Hearing Committee Chair. The Student Hearing Committee Chair will then arrange for the voluntary attendance of the witnesses identified by the Student Hearing Committee. The Student Hearing Committee Chair shall notify both parties of the additional witnesses. If any witness call by the Student Hearing Committee intends to present written information to the Student Hearing Committee, the Student Hearing Committee Chair is responsible for forwarding such information to both parties and the Student Hearing Committee prior to the hearing.
6. Following the presentation of evidence, the committee will permit each party to present a brief closing statement.
7. The GSBS shall record, either digitally, through audiotape, or otherwise as deemed appropriate the hearing committees proceeding until such time that the student hearing committee begins discussion and deliberation and prepares its Findings and Recommendations. Deliberations shall not be recorded. The record is university property. Pursuant to the Family Educational Rights and Privacy Act of 1974 (FERPA), as amended, the student will be allowed to review, but not to copy, the hearing record 34 C.F.R 99.10 (2003). Neither party nor any witnesses are permitted to make any independent record of the proceedings.
8. The Student is expected to attend and participate in the Student Hearing committee. If either party elects not to attend a hearing after appropriate written notice, the case will be reviewed as scheduled on the basis of the information available, and a recommendation will be made by the committee. Although no inference may be drawn against the student for failing to attend a hearing or remaining silent, the hearing will proceed and the conclusion will be based on the evidence presented. No decision shall be based solely on the failure of the student to attend the hearing or answer the charges.

#### E. Hearing Committee Findings and Final Disposition

After completion of the hearing, the hearing committee shall adjourn and meet in closed session to discuss, deliberate and prepare the Finding and Recommendations. The Student Hearing Committee will determine the recommendations by a simple majority (more than half of the votes cast) of members present at the hearing. The Hearing committee's Findings and Recommendations Report shall be forwarded to the Dean, a copy is also sent to both parties for review and determination of necessary action. The Dean will forward a letter to all concerned parties, enclosing copies of the Hearing committee report, and directing what action will be taken

within 10 business days from the conclusion of the hearing. This letter will be sent via certified mail to the student's last known official, mailing address as provided by the student to the Registrar's Office and electronically to the student's HSC email account. The decision of the Dean regarding the hearing committee's findings of fact and recommendations will be final.

#### F. Appeal

Within ten (10) business days of receipt of the decision of the Dean, if either party believes that the due process procedures have been violated, an appeal may be made, in writing, to the Provost's Office. The Provost will review the case and notify all parties of his or her decision within ten (10) business days. If a written appeal is not submitted within ten (10) business days following receipt of the Dean's letter, the right to appeal is thereby waived and the Dean's decision is final. Either party may only raise, or the Provost shall only consider, the following:

- a. Whether a procedural deviation occurred that substantially affected the outcome of the case;
- b. Whether there is new information sufficient to alter the Findings or other relevant facts not available or mentioned in the original hearing, because such information and/or facts were not known to the person appealing at the time of the original Student Hearing committee.

The Provost will review the Findings and Recommendations and, at his or her sole discretion, the record from the Student Hearing committee and supporting documents, and transmit his or her decision in writing to both parties, the Student Hearing Committee Chair, and the Dean. The Provost's decision shall be final.

#### G. CONFIDENTIALITY

The Student Hearing Committee shall not retain in their possession any personal files, materials received during the appeal procedure, or notes taken during the hearing. The administrative staff person will collect all materials and return them to the GSBS office to retain in a confidential file. No part, committee member, or other participant or observer in the hearing procedure shall reveal any facts, documents, or testimony gained through participating in or observing the hearing to any other person, unless required by a court of law to do so or upon the advice of the TTUHSC's legal counsel.

*\* Throughout this document, the phrase "business days" refers to days when the Graduate School of Biomedical Sciences administrative offices are open, and excludes weekends and holidays.*

## **GRADUATE AWARDS**

### **Purpose:**

To outline the qualifications and selections process for the GSBS Graduate Awards: K. Wyatt McMahon Outstanding Graduate Student and the Dean's Recognition Award.

### **Requirements to qualify:**

The graduating student must be nominated by his or her respective program /concentration.

The student will be selected by accomplishments in the following areas:

- Educational merit (e.g. GPA, coursework, course load, etc.)
- Contributions made to TTUHSC and its students
- Contributions made to GSBS
- Contributions made to the student's laboratory
- Contributions made to the scientific discipline evidence by peer reviewed publications and meeting presentations
- Receipt of research funding and/or scholarships
- Community service
- Other awards received
- Attends GSBS Commencement
- Each nomination will require a complete C.V./resume; two letters of recommendation; and a brief narrative describing the accomplishments they have made during their graduate career.

### **Selection Committee:**

From nominations submitted by GSBS students, the Dean will appoint a selection committee composed of seven members: five

faculty and two students. The selection committee will choose two award recipients based on the criteria listed above. The Senior Associate Dean serves as a non-voting member representing the GSBS.

### **Monetary Award:**

Award recipients may receive a plaque, a medallion, and /or a monetary or travel award. The amount of a monetary award will be determined by the GSBS office.

### **K. Wyatt McMahon Outstanding GSBS Student – selected from doctoral nominations**

- Required to attend the GSBS Commencement
- Serves as GSBS Commencement speaker
- Must provide text of speech for GSBS approval of content

### **Dean's Recognition Award – selected from master of science nominations**

- Required to attend the GSBS Commencement
- Reads the description of the GSBS seal at Commencement

## **GRADUATION**

### **Grade Requirement for Graduation.**

- The minimum requirement for graduation is a cumulative GPA of 3.0 in all courses taken for graduate credit, exclusive of the credits for the thesis/dissertation. Procedures to appeal a grade may be found in the Complaint Policy.
- 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 with a grade less than B will not be accepted, nor will grades of Pass or Satisfactory. Grades on transferred work will not contribute to the grade average on courses completed at TTUHSC.

### **Semester of Graduation.**

There are three official graduation dates: May, August and December. Every GSBS candidate for a graduate degree must be registered in the semester of graduation. Failure to graduate at the expected time requires additional registrations as necessary until graduation. Doctoral students who have been admitted to candidacy and accumulated 120 hours may be eligible to reduce hours during their last year (see 129 Hour Rule). Masters students are required to register for 9 hours in the fall and spring and 6 hours during the summer. Off-campus students may register for 1 hour of thesis, dissertation, or research until graduation. Students receiving financial assistance should consult **financial aid** prior to reducing hours. International students may also want to check with the DSO and payroll prior to reducing hours.

### **Statement of Intention to Graduate.**

A student planning to graduate must file a Statement of Intention to Graduate with the GSBS office at the beginning of the semester of intended graduation. No candidate's name will be placed on a tentative list for graduation for any graduation date unless this statement has been received in the GSBS Office by the specified deadline. The deadline to file the intent to graduate is posted on the GSBS website under Graduation Deadlines.

A candidate who fails to graduate at the expected time is required to file a new Statement of Intention to Graduate for any subsequent graduation.

Students are required to complete the HSC Intent to Graduate form on the **Student Affairs website**.

### **Graduation Fee.**

Early in the semester of graduation, the candidate will pay a graduation fee to cover the cost of printing the diploma. This fee is paid again if the student does not graduate in the semester in which the fee was paid.

## **TITLE IX**

Texas Tech University Health Sciences Center is committed to providing and strengthening an educational and working environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. TTUHSC prohibits discrimination based on sex, which includes pregnancy, sexual orientation and gender identity, as well as other types of sexual misconduct.

TTUHSC's Title IX and Sexual Misconduct policy and complaint procedures may be found in TTU System Regulation 07.06 and TTUHSC OP 51.03. Additionally, Part IV of the TTUHSC Student Handbook relates to complaints including students. Links to these

resources are below:

TTU System Regulation 07.06 | <https://www.texastech.edu/offices/cfo/system-regulation-07.06-sexual-misconduct.pdf>

HSC OP 51.03 | <https://www.ttuhs.edu/administration/documents/ops/op51/op5103.pdf>

Part IV of the TTUHSC Student Handbook | <https://www.ttuhs.edu/student-affairs/handbook.aspx>

If you have been involved or are aware of sex discrimination or sexual misconduct in any form, please use the online report form available at:

[https://cm.maxient.com/reportingform.php?TexasTechUnivHSCSS&layout\\_\\_id=10](https://cm.maxient.com/reportingform.php?TexasTechUnivHSCSS&layout__id=10)

Additionally, please feel free to reach out to the TTUHSC Title IX Coordinator directly at [TitleIXCoordinator@ttuhs.edu](mailto:TitleIXCoordinator@ttuhs.edu) to assist you with your concern.

## **FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (FERPA)**

### **Purpose:**

To inform the students and parents of Federal law that protects the privacy of student education records.

### **Overview**

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education.

FERPA gives parents certain rights with respect to their children's education records. These rights transfer to the student when he or she reaches the age of 18 or attends a school beyond the high school level. Students to whom the rights have transferred are "eligible students."

- Parents or eligible students have the right to inspect and review the student's education records maintained by the school. Schools are not required to provide copies of records unless, for reasons such as great distance, it is impossible for parents or eligible students to review the records. Schools may charge a fee for copies.
- Parents or eligible students have the right to request that a school correct records which they believe to be inaccurate or misleading. If the school decides not to amend the record, the parent or eligible student then has the right to a formal hearing. After the hearing, if the school still decides not to amend the record, the parent or eligible student has the right to place a statement with the record setting forth his or her view about the contested information.
- Generally, schools must have written permission from the parent or eligible student in order to release any information from a student's education record. However, FERPA allows schools to disclose those records, without consent, to the following parties or under the following conditions (34 CFR § 99.31):
  - School officials with legitimate educational interest;
  - Other schools to which a student is transferring;
  - Specified officials for audit or evaluation purposes;
  - Appropriate parties in connection with financial aid to a student;
  - Organizations conducting certain studies for or on behalf of the school;
  - Accrediting organizations;
  - To comply with a judicial order or lawfully issued subpoena; Appropriate officials in cases of health and safety emergencies;
  - and State and local authorities, within a juvenile justice system, pursuant to specific State law.

### **Directory Information**

TTUHSC or specific Schools may disclose, without consent, "directory" information such as a student's name, address, telephone number, date and place of birth, honors and awards, and dates of attendance. However, schools must tell parents and eligible students about directory information and allow parents and eligible students a reasonable amount of time to request that the school not disclose directory information about them. TTUHSC must notify parents and eligible students annually of their rights under FERPA. The actual means of notification (special letter, inclusion in a PTA bulletin, student handbook, or newspaper article) is left to the discretion of TTUHSC.

For additional information or technical assistance, you may call (202) 260-3887 (voice). Individuals who use TDD may call the Federal Information Relay Service at 1-800-877-8339.



Or you may contact the following address:

Family Policy Compliance Office  
U.S. Department of Education  
400 Maryland Avenue, SW  
Washington, D.C. 20202-5920

## RESEARCH ASSISTANTSHIPS

### Purpose:

To outline the Texas Education Code and to list benefits provided to research assistantship positions.

### Texas Education Code Statute: Section 54.063.

A teaching assistant or research assistant of any institution of higher education, and the spouse and children of such a teaching assistant or research assistant, are entitled to register in a state institution of higher education by paying the tuition fees and other fees or charges required for Texas residents under Section 54.063 of this code, without regard to the length of time the assistant has resided in Texas if the assistant is employed at least one-half time in a teaching or research assistant position which is related to the assistant's degree program under rules and regulations established by the employer institution.

Students employed as teaching or research assistants employed at least half time by any public institution of higher education in a degree program-related position may pay the same tuition while attending any public institution of higher education as a resident of Texas for themselves, their spouses, and their dependent children, regardless of the length of residence in the state. The institution which employs the students shall determine whether or not the students' jobs relate to their degree programs. If the spouse or children attend an institution other than the one employing the research or teaching assistant, they must provide proof of his or her current employment to the college they attend. It is the intent of this rule that employment be for the duration of the period of enrollment for which a waiver is awarded.

### Enrollment.

Students on research assistantships must be full-time students. The minimum enrollment for full-time graduate status is 9 hours in the regular semester and at least 6 hours in the summer term. Students on assistantships must matriculate every semester or the assistantship will be temporarily suspended until the next semester of matriculation. All doctoral students upon acceptance into GSBS will be employed as a research assistant funded either by the GSBS or the department. Any exceptions to this policy must be approved by the Dean. The research assistantship will be funded for a total of 5 years with the GSBS paying 2.5 years. Students that matriculated prior to 6/1/19 are funded at 40 months from GSBS and 20 months from the PI or 34% of the total funding. Any funding past the 5th year for a doctoral student or students accumulating over 129 semester credit hours, will be the responsibility of the department/PI. For continuation of the research assistantship from year to year, the student must be in good academic standing and making satisfactory progress toward a degree.

### Fee Waivers.

Students must be appointed before the 12th class day of the fall or spring semester (4th class day of the summer term) as a benefits eligible research assistant with employment of at least one-half time to be eligible for fee waivers. The student must be employed for 4 ½ months in a semester to qualify for the waivers. If the student leaves early or does not meet the 4 ½ month criteria, the fee waivers will be revoked and the student will be required to pay the balance due. GSBS Students that are employed as Research Assistants that are also taking TTU courses will not be eligible for fee waivers for the TTU Tuition and fees. Fee waivers are only guaranteed for GSBS courses.

1. Fee Assistance Program: Exempts, by Board of Regents action, the student from the payment of Institutional Tuition, Student Services Fee, Information Technology Fee, Library Fee, University Fee, Recreation Center Fee, and Course Fees.
2. Non-Resident State Tuition Exemption Form: Exempts a student from the payment of non- resident tuition over and above the state resident rate.
3. Medical Services Waiver Form: Waives the student from payment of the Medical Services Fee.

For additional information on student employment, please refer to HSC OP 70.27 - Appointment of Student Employees

## Student Employment

Research Assistants are expected to work in the lab 20 hours per week. Additional hours in the lab (those over 20) are required for fulfillment of coursework and/or dissertation preparation. Students that have RAs may work a flex schedule to cover 10 work days

out of the lab per academic year. Any time taken beyond 10 work days each year will be considered leave without pay. Work days are defined by the GSBS calendar and exclude holidays. The 10 flex days may not be accumulated and shall not be carried forward to the next year.

Research Assistant positions are not entitled to vacation or sick leave. Student employment is governed by the Governed Code, Chapter 661 of the Texas Statutes. Excerpts from the Code are provided below to assist the GSBS Faculty and Students. The complete verbatim document may be viewed at: <https://statutes.capitol.texas.gov/Docs/GV/pdf/GV.661.pdf>

#### **SUBCHAPTER F. GENERAL PROVISIONS FOR VACATION LEAVE FOR STATE EMPLOYEES**

##### **661.152. Entitlement to Annual Vacation Leave**

(a) A state employee is entitled to a vacation in each fiscal year without a deduction in salary, except for a state employee who is: an employee of an institution of higher education as defined by Section 61.003, Education Code, who: is employed in a position for which the employee is required to be a student as a condition of the employment; Added by Acts 1999, 76th Leg., ch. 279, § 19, eff. Sept. 1, 1999.

#### **SUBCHAPTER G. GENERAL PROVISIONS FOR SICK LEAVE FOR STATE EMPLOYEES**

##### **661.201. Applicability**

(b) An employee of an institution of higher education as defined by Section 61.003, Education Code, is eligible to accrue or take paid sick leave under this subchapter only if the employee: is employed to work at least 20 hours per week for a period of at least four and one-half months; and is not employed in a position for which the employee is required to be a student as a condition of the employment. Added by Acts 1999, 76th Leg., ch. 279, § 19, eff. Sept. 1, 1999.

### **Leave of Absence**

Full-time students must be registered every semester. In extreme circumstances it may be necessary for a student to be absent from their studies or research for an extended time. If a student desires leave exceeding 10 days and the leave is not medically necessary, the leave must be officially approved by the advisor/mentor and Assistant Dean prior to such time as the leave has been taken. Students planning any leave should promptly consult with their faculty mentor/advisor, meet with the GSBS Student Affairs Advocate, and submit the GSBS Leave of Absence form for approval. No leave shall be granted during the Fall, Spring, or Summer semesters unless medically necessary; exceptions to this policy must have GSBS approval. Leave should be taken between semesters: after the last day of class and prior to the first day of class for the next semester. It is the student's responsibility to notify their mentor of any time out of the lab. Any student who fails to register for three consecutive semesters (12 months) and who does not have an official leave of absence from study is subject to review for readmission. Normally, leaves of absence will not exceed one year and do not extend the maximum time allowed for completion of the degree. If extended leave is taken that is not officially approved by the Assistant Dean or is not medically necessary, the student employee is subject to disciplinary actions including but not limited to termination.

The following Leaves of Absence may be requested:

- Personal and Planned Educational Leaves of Absence: Defined as a planned interruption or pause in a student's regular education during which the student temporarily ceases formal studies. Such activities may be for the purpose of clarifying or enriching educational goals or to allow time to address personal matters and thus enhance the prospect of successful completion of the student's academic program. The student must plan to return to the GSBS at the end of the approved leave period.
- Medical Leave of Absence: The student must provide documentation from a health care professional confirming that the student is unable to engage in graduate study; such documentation should include a statement as to when the student may be expected to resume classes. Students on Medical Leave are not allowed to attend GSBS classes or participate in student organizations, programs and/or activities. Pregnant or parenting students, please see additional information below.
  - Under Title IX of the Education Amendments of 1972, absence for pregnancy, childbirth, or parenting responsibilities will



extend the maximum time allowed for completion of the degree equivalent to the length of the leave. Upon return from leave, the student will be reinstated to the academic status held when the leave began. Absences because of pregnancy or childbirth will be approved for as long as the student's doctor deems the absences is medically necessary. Students must notify the GSBS of leave via the Leave of Absence form.

## Student Health Information

### Purpose:

To define the availability of health services to graduate students.

1. **STUDENT FEES:** All master's students are required to pay the TTUHSC Medical Services Fee each semester, and Ph.D. students may opt-in to pay the fee. With this fee students can access healthcare in the clinic and see a nurse or physician at no charge for minimal or limited minor problems. The Medical Services Fee is automatically waived for students who hold research assistantships. For PhD students to gain access to this service, they would need to opt-in to pay the fee. More information on this fee and its benefits can be located at the **TTUHSC Student Affairs Site**.
2. **MANDATORY STUDENT HEALTH INSURANCE AND WAIVER PROCESS:** All GSBS students are required to have health insurance. In order to ensure coverage, all TTUHSC students are automatically enrolled in the University-sponsored Student Health Insurance Plan (SHIP) unless an approved waiver is submitted. Academic Health Plans (AHP) administers the Students Health Insurance Plan for TTUHSC. Students without an approved waiver for health insurance are billed directly by AHP. Options for health insurance include:
  - a. Research assistantships are eligible to pay for employee health benefits. You must visit Human Resources to sign up for this insurance.
  - b. Students may purchase the HSC Academic Health Plan. For more information on this plan see the **Student Life Site**.
  - c. Students may purchase health insurance outside of the HSC.
  - d. Students may be covered by their family insurance plan.
3. **IMMUNIZATION AND SCREENING FEE:** Each Fall students are assessed an Immunization and Screening Fee that includes the initial validation and maintenance of immunization records as required for Healthcare Personnel. Immunization records are kept up to date through the Office of Institutional Health. Annual services provided are TB screening, Influenza Vaccine, and completion of Hepatitis B vaccine post matriculation. The Office of Institutional Health also provides follow up for any blood borne pathogen exposure that may occur while you are a student at TTUHSC.

# Program and Concentration Specific Information

## The Doctoral Degree

### Admission to Doctoral Study

Admission to doctoral study is restricted to applicants whose backgrounds show definite promise of success on this, the highest level of academic endeavor.

### Admissions Process

Applicants apply on the GSBS application website, <http://www.bioraider.com> where they create an account and choose the program application.

All completed applications received by the application deadline are reviewed by the Ph.D. Selection Committee. The committee is comprised of two members from each concentration as appointed by the department chair for a total of 8 committee members. The Senior Associate Dean for Admissions serves as chair and ex officio, and only votes in case of a tie.

A completed application consists of the following items: submitted application, unofficial transcript(s) from U.S. institutions and/or course-by-course transcript evaluation, GRE (required for international applicants), at least two letters of recommendation, essay/statement of purpose, resume/CV, application fee.

Incomplete applications at the application deadline are not and will not be processed or reviewed for admission. No exceptions are made.

Committee members conduct a holistic application review. Members submit a rubric evaluating applicants on personal essay, letters of recommendation, research experience, and graduate-level research/coursework. The numerical rating is compiled into a weighted composite score to arrive at a final admission score. This final admission score is used as the starting point for discussion and does not represent a hard cut-off for consideration.

The committee generally meets weekly December-March to review completed applications, conduct interviews and vote to determine which applicants to forward to the GSBS Admissions Committee or which applicants will be denied admission.

At each meeting, committee members are provided with the composite rubric evaluation and decide by consensus if an applicant will be invited to interview. Applicant interviews are conducted by the entire committee rather than by an individual committee member. No applicant is forwarded to the GSBS Admissions Committee without interviewing with the committee.

After the interview, the committee discusses the applicant (which includes the application, required supplemental items and interview) and votes to either forward to the GSBS Admissions Committee or deny admission. Voting requires a simple majority of committee members present, and a quorum is required for a meeting. The GSBS Admissions Committee has final authority to approve admission decisions.

### Years of Study

A minimum of three years of graduate study beyond the bachelor's degree is required for the doctorate. Work completed for the master's degree may be considered as a part of this period if it forms a logical sequence in the entire degree program. Ordinarily, credit will not be given for work completed more than seven years prior to admission to the doctoral program at TTUHSC. Exception to this policy will require written justification by the graduate advisor and approval by the GSBS Dean following review by the Core Curriculum Committee.

Work completed in the doctoral program of another recognized graduate school will be considered on the recommendation of the graduate advisor, but no assurance can be given that such work will reduce the minimum residence (see Residence Requirements).

Doctoral study cannot be calculated solely in terms of credit hours, but the program for the doctorate requires the completion of 72 or more semester hours of work beyond the bachelor's degree. Typically the 72 credit hours is broken down into 48 didactic hours; 12 hours (maximum) of research and 12 hours (maximum) of dissertation. Prior approval by the Dean is required for any exceptions.

## Residence Requirement

The intent of doctoral residency is to ensure that doctoral students benefit from, and contribute to, the complete spectrum of educational and professional opportunities provided by the graduate faculty. When establishing residency, the student should interact with faculty and peers by regularly attending courses, conferences and seminars, and utilize the library facilities and resources needed to support excellence in graduate education. Doctoral candidates must complete at least three (3) years of full-time graduate level work beyond the baccalaureate degree (or one year beyond the master's degree), of which at least one academic year - the residency year - must be spent in residence on the TTUHSC campus. The residence requirement is fulfilled by the completion of at least 9 hours of course work in each of the two long terms and 6 hours in the summer. Other patterns for fulfilling residency requirements require approval of the GSBS Office.

## Biomedical Sciences Ph.D. Program Core Curriculum Policy

### Overview

All biomedical science fields recognize the need for high levels of integration of scientific knowledge to accelerate opportunities for basic and translational research. Toward 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. These skills serve as a foundation for all concentrations/programs in the GSBS.

### Curriculum Design and Courses

The Core Curriculum consists of the five Core Courses taken in the first semester. GSBS requires that all doctoral students take all core courses in the first semester of enrollment and Responsible Conduct of Research in the second semester.

### Core Curriculum Courses

1. GSBS 5471 - Core I: Molecules - This course offers a broad coverage of biochemistry with an emphasis on structure and function of macromolecules, and the pathways of intermediary metabolism.
2. GSBS 5372 - Core II: Cells - The structure/function relationships that underlie basic cellular processes, including translation protein trafficking, cytoskeletal organization and motility, cell adhesion and cell division.
3. GSBS 5373 - Core III: Genes - Teaches essential scientific concepts underlying the field of Molecular Biology and Molecular Genetics.
4. GSBS 5174 - Core IV: Biomedical Seminar Series - Students will attend and participate in seminars.
5. GSBS 5275 - Core V: Introduction to Biomedical Research - Introduces the first-year graduate student to the fundamental principles and techniques in basic biomedical research.

### Opting Out of Core Curriculum Courses

Students who have a master's degree in a biomedical or biological sciences discipline may request to opt out of the individual core courses, Core I, Core II or Core III. GSBS 5174 (Core IV), and GSBS 5275 (Core V) may not be waived. A waiver request to the GSBS Dean must come from the student's graduation program/concentration advisor, or in the case of undeclared students, from the GSBS Senior Associate Dean. When applicable, the request should include a course syllabus and grade received for each course that is considered equivalent to the core courses for which a waiver is requested (for transfer credit, a syllabus and grade are required). The waiver request must be made prior to the first day of class. The request will be reviewed by the Course Director of the course requesting to be waived, and the recommendation evaluated by the Core Curriculum Coordination (CCC) Committee. The GSBS Office will notify the student and graduate advisor prior to the 12th day of class. During the time prior to the waiver, the student must audit the core course for which a waiver is requested.

## Undeclared Student Information

Students in the Biomedical Sciences Ph.D. program enter as undeclared, complete the core curriculum, and rotate in faculty labs prior to selecting a mentor and concentration. The following is intended to provide information for new students up to the time of mentor/concentration selection.

At the earliest possible date, whether that be before or after New Student Orientation, each student will meet with the First-year Student PhD Advisor to discuss Year 1 course selection, lab rotations, GSBS policy for selecting a concentration, and other academic issues.

During the first Fall semester, all students complete the core curriculum. One of the core curriculum courses is GSBS 5275

Introduction to Biomedical Research. During the first 4 weeks of the course, advisors will present concentration specific information and discuss research opportunities within each concentration. After the initial 4 weeks, students will complete two lab rotations of their choosing based on faculty availability as well as receive additional advisement regarding mentor and concentration selection. Students should refer to the course syllabus for additional information.

Students are encouraged to complete at least three lab rotations prior to selecting a mentor and concentration, however at minimum students must complete two rotations. The earliest students may select a mentor and concentration is the last day of the first Fall semester. If a student is still undecided after the Fall semester, additional lab rotations may be completed during the Spring term and a mentor and concentration must be selected by the end of the Summer term.

During the first Spring term, undeclared students register for GSBS 5098 (6 hours) Techniques in Biomedical Research, advanced course work and seminar in the concentration of interest, and GSBS 5101 Responsible Conduct of Research. Students are encouraged to speak to the concentration advisor and Student Affairs Advocate for additional guidance and information.

Prior to selecting a mentor and concentration, students are encouraged to review concentration guidelines and become familiar with concentration expectations.

Once a mentor and graduate concentration have been selected by mutual agreement between student and mentor, the Application for Change in Major form should be prepared by the student, relevant graduate advisor, department administrator, and submitted to the GSBS office for final approval by the Dean (or appointed delegate).

The requirements specified in this policy are intended to balance student needs with access/representation of each of the Biomedical Sciences Program concentrations.

## Filing a Degree Plan

The Doctoral Degree Plan will be submitted to the GSBS during the Spring semester of the second year of work. Revisions of the plan are permitted as needed by submitting the **Changes to the Degree Plan** form.

## Advisory Committee

As soon as an applicant's program/concentration has been determined, an advisory committee of at least four members of the graduate faculty will be appointed by the GSBS Office on the recommendation of the graduate advisor. This committee will meet at least annually with the applicant and will direct his or her work at all stages. The expectations of committee members, the advisor, and the Dean's representative are available on the GSBS website. The Chair of a student's committee must hold a full or associate membership in the program/concentration from which the student will receive the doctorate. Students may elect to have a co-Chair, who must have a graduate faculty appointment. It is strongly recommended that one of the committee members be outside the student's concentration and preferably a prominent scientist from another institution in the field of the dissertation research.

## Qualifying Examination

The Qualifying Examination for Admission to Candidacy for the doctoral degree is one of the major features of the doctoral program and will be administered in the major area of study. The examination requires a synthesis and application of knowledge acquired during the course of study for the doctoral degree; consequently, successful performance in course work does not necessarily guarantee successful performance on the Qualifying Examination. The purpose of the Qualifying Examination is to ensure that students have mastered the fundamentals in a major area of interest, and they are adequately prepared to begin working full-time on doctoral research.

The following policies and procedures apply to ALL current Biomedical Sciences Ph.D. students, regardless of which concentration they have chosen.

A student is eligible to stand for this examination after receiving approval of the doctoral degree plan from the GSBS Office and completing most of the course work prescribed by the approved plan. Students may take the Qualifying Examination as soon as they have completed core coursework, however, it must be completed by the end of the third year. A petition for an extension should be made by the mentor and approved by the GSBS Dean. In the absence of extenuating circumstances, failure to complete the Qualifying Examination by the end of the third year will result in dismissal from the Biomedical Sciences program/GSBS. Each exam component (written and oral) can be remediated once. Failure to pass both exam components will result in dismissal of the student from the Biomedical Sciences program/GSBS. If a student fails the qualifying examination, but is in good academic standing, the

student may graduate with a Non-Thesis M.S. degree, if all requirements are met. The topic of the qualifying exam may be on any relevant research area. The research topic may not be the aims of an existing or submitted research proposal from the mentor or anyone other than the student.

The qualifying exam will be written in the F30/F31 format. See GSBS website for additional details regarding required forms.

With the consent of the mentor and the student, the Advisory Committee will serve as the Qualifying Examination Committee, with the exception that the Chair of the Committee will be elected by the committee members. The mentor is ineligible to be the Chair.

The Examination Committee votes (pass/fail) on both the written and oral exam components. If a student receives more than one negative vote for one component, this will constitute failure of the respective exam component. The written exam must be passed before the oral exam can be scheduled. An overall pass in the oral exam constitutes a pass on the Qualifying Exam.

The oral exam should be presented as a typical public seminar (40-45 minutes) followed by an open Q&A discussion that will not exceed 15 minutes. This presentation will be followed by a closed-door committee examination.

The exam timeline is as follows:

1. Year 1 (defined as the year when Ph.D. students enter the GSBS; for MD/Ph.D. students, Year 1 begins upon entering the Ph.D. portion of the program, after completing USMLE Step 1). In Year 1 the student and mentor establish an Advisory Committee.
2. Typically in year 2 or Year 3 a consensus is reached that the student is ready to prepare the written portion of the Qualifying Examination which is in the format of an NIH R01 grant application. At this point the student prepares and submits a one-page abstract/Specific Aims of the proposed topic to the committee for approval. The student then also notifies the Graduate Advisor and Student Affairs Advocate of the composition of the qualifying exam committee (this must occur no later than 3 months prior to the examination).
3. After the written exam is submitted, the Examination Committee submits to the committee chair within 2 weeks a pass or fail/revision memo with justifications to the chair of the committee. If a student receives more than one negative vote, this will constitute failure of the written exam component. The student may submit one revised written exam, which is then voted on pass/fail; more than one negative vote will constitute failure of the written exam and failure on the Qualifying Exam.
4. The oral exam is a public seminar followed by an oral examination by committee. The oral exam must take place within 4 weeks of receiving a passing grade on the written exam. Only one examination committee member may be absent from the oral exam. A new chair should be chosen if the committee chair is absent.
5. If a student receives more than one negative vote, this will constitute failure of the oral exam component. The student is afforded one opportunity to repeat the oral examination.

#### Procedure When the Examination is Successful

If the Qualifying Examination is considered successful, the Chairperson of the advisory committee will send the Admission to Candidacy form to the GSBS Office for consideration by the Graduate Council. This recommendation should be forwarded as soon as possible after all the above requirements have been met.

#### Procedure When the Examination Is Not Successful

If the Qualifying Examination is not successful, the Chairperson of the advisory committee will notify the GSBS Office in writing. Failure to complete/pass the Qualifying Examination within the specified time (deadline is the end of the third year) will result in dismissal from the program irrespective of performance in other aspects of doctoral study.

## **Admission to Candidacy**

Authority for admitting an applicant to candidacy for a doctoral degree is vested in the Graduate Council. Upon receipt of an Admission to Candidacy Request form from the advisory committee, the GSBS Office will submit it to the Graduate Council for approval.

By written communication, the GSBS Office will transmit the results of the council's action to the applicant and to the Chairperson of the advisory committee. A student must be admitted to candidacy for the doctorate at least four months prior to the proposed graduation date.

Admission to Candidacy indicates that a doctoral student has completed all coursework and has passed a comprehensive exam attaining the graduate level to begin working on their dissertation manuscript.

#### **Completing the Admission to Candidacy Form**

Step 1: Verify the student is eligible for candidacy.

- A Doctoral Committee must be appointed prior to Admission to Candidacy
- Students must have successfully completed the comprehensive Qualifying Examination certified by the doctoral committee

- All enrollment requirements for admission to candidacy have been met and the student:
  - Has been continuously enrolled since entering the program
  - Has no "I" on their record
  - Has a minimum 3.0 overall GOA
- The student's degree plan must be on file with the GSBS office
- Once candidacy is approved, the student may enroll in dissertation hours in the following semester. Students may not enroll in dissertation hours until the semester following effective admission to candidacy. Once the student enrolls for dissertation hours, they must be continuously enrolled in dissertation hours every semester until graduation.

Step 2: Complete the Admission to Candidacy Form

Step 3: Approvals (completed by the GSBS Office)

- GSBS Graduate Council Rep: Signed after approved at Graduate Council meeting
- GSBS Office: Signed after approved at Graduate Council

### **Proficiency in English**

A student found deficient in English may be required to satisfactorily complete certain specified courses in English usage (without graduate credit) before being considered for admission to candidacy for a graduate degree.

## **Publication of Student Work**

Every PhD student is required to publish an original peer-reviewed research paper to demonstrate that the student has made a significant contribution to science. Review articles are not an acceptable contribution. The manuscript must be accepted (or accepted pending minor revisions), in press or published before submission of the Approval to Schedule Defense Form. The manuscript must be in a journal indexed by PubMed or Web of Science. The student must be the "first author" or share "first authorship" with a co-author of the manuscript, and the work must be completed during the current degree program. Waivers: If there are compelling reasons that the student will not have a published first author manuscript when the approval to schedule defense form is submitted, the Dissertation Committee Chair may request a waiver from the GSBS Dean. In considering the waiver request there are three stipulations: 1) The student's mentor and advisory committee must consider the manuscript draft suitable for a first author (or co-first author) publication; 2) the reasons for the delay must be explained; 3) the waiver only allows the student to schedule the defense. The manuscript must be accepted or in press in order for the defense to take place. Based on this information, the GSBS Dean may grant a waiver.

## **Dissertations**

A dissertation is required of every candidate for a doctoral degree. The dissertation work must earn a grade of at least B in order to qualify the student for graduation.

Defenses may be scheduled at a suitable time after the dissertation (not necessarily the final copy) has been read by the advisory committee. Defenses should be scheduled during an active term and not between terms or during extended break periods. They are generally open to the public and considered open meetings. The dissertation copy is typically provided to the committee two weeks prior to the oral examination. The required forms noting the time, place, and other information pertaining to the examination are available on the GSBS website. The examination is conducted by the advisory committee and a representative of the GSBS Dean. All members of the committee participate fully in the examination and cast a vote. Faculty members other than members of the committee, including the Dean's representative, may participate in the examination, but have no vote in determining the outcome. At the conclusion of the examination, the Chairperson of the advisory committee will send the Dissertation Oral Signature Defense Form to the GSBS Office, giving the result of the examination.

The Graduate School of Biomedical Sciences strongly recommends that each student be required to present and defend a dissertation proposal before his or her committee early in the course of the research. The subject of the dissertation must be approved by the advisory committee and the GSBS Office at least four months before the candidate's proposed date of graduation. The dissertation must demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter and its background, and a high degree of skill in organizing and presenting the materials. The dissertation should embody a significant contribution of new information to a subject or a substantial reevaluation of existing knowledge, presented in a scholarly style. The work on the dissertation is constantly under the supervision of the advisory committee and any other faculty the committee or GSBS Office may consider necessary. A copy of the dissertation should be presented to the committee members and the Dean's



representative at least two weeks prior to the defense.

### Grading

Dissertation hours are graded with a CR except for the last semester in which a letter grade is assigned. At the instructor's discretion, a letter grade may be assigned to the last 12 hours of dissertation. The letter grade assigned for the written dissertation and oral presentation/defense is based upon evaluation by committee members using the Dissertation Rubric.

### Hours

Registration for at least 12 hours of 8000 is required for a doctoral dissertation. Once dissertation hours have begun, a student must be enrolled in such courses every semester until graduation unless granted an official leave of absence. Students may not enroll in dissertation courses before formal admission to a degree program by the GSBS Office.

### Reference Manual

Students may reference the **Thesis – Dissertation Manual**. All manuscripts must conform to the published policies. The final copy of the dissertation must be submitted electronically to the GSBS office. Dissertations must be accompanied by an abstract of no more than 350 words. GSBS does not require a bound copy, although additional copies may be required by the advisory committee. The GSBS Office recommends utilizing [www.thesisondemand.com](http://www.thesisondemand.com) to purchase bound copies, however any bindery is acceptable.

### ETD – Electronic Thesis & Dissertations

The final copy of the dissertation must be submitted electronically to the GSBS office along with the ETD Account Information for HSC Students. Detailed instructions for completing the ETD account information is available on the GSBS website. The GSBS will forward the documents to the TTU Library for archival on the ETD website.

### Fees

Early in the semester of graduation, the candidate will pay the HSC Bursar's Office a document fee to cover the cost of uploading and storing the dissertation to the ETD website.

### Dissertation Announcements

Department Coordinators should notify all GSBS faculty and the GSBS office of all defenses at least 6 weeks prior to the defense for posting to the GSBS on-line event calendar. Faculty interested in attending the defense at an off-site location should notify coordinators at least 4 weeks prior to the defense so room arrangements can be made and TechLink or Zoom secured. Two (2) weeks prior to the defense, coordinators should prepare and forward a copy of the **dissertation announcement template** to all GSBS faculty and students.

## Time Limit

All requirements for the doctoral degree must be completed within a period of eight consecutive calendar years, or four years from admission to candidacy, whichever comes first. Graduate credit for course work taken at TTUHSC more than eight calendar years old at the time of the final oral examination may not be used to satisfy degree requirements. Absent an extension, the student may be permitted to retake the Qualifying Examination, and upon passing that examination, be readmitted to candidacy by the Graduate Council for some period of time not to exceed four years.

## 129-Hour Rule

### Purpose:

To define enrollment limits sanctioned by the Texas Legislature and outline the process for doctoral students approaching maximum limits. Master's students may not reduce hours unless they are designated by the GSBS office as "off-campus" students. Master's students that are designated as off-campus students should review the guidelines under "semester of graduation" within the Enrollment section. Reduced enrollment hours may affect financial aid status and/or payroll FICA exemptions. Students are encouraged to check with financial aid and the payroll office before taking the reduced hours. International students should also check with the TTUHSC DSO to verify hours for compliance with the Department of Homeland Security. Typically, international students may only reduce hours in their last semester. Any exceptions must be approved and updated in SEVIS.

1. Once a doctoral student has passed candidacy and accumulated 120 hours, the student may register for 3 hours each semester for up to one year.

Ex. 3 hours - Fall; 3 hours - Spring; 3 hours - Summer

NOTE: If student elects the 3-3-3 enrollment and does not complete the degree requirements within that period, the student must resume full-time status (9 hours per long semester).

2. Students accumulating 130+ hours may be charged out-of-state tuition (full-cost) and forfeit any GSBS state-funded Research Assistantship. The faculty mentor will be responsible for the student's salary once the student exceeds 130 semester credit hours.
3. Out-of-state tuition may be waived for students exceeding 130 hours if those students entered the doctoral program with excessive hours from a master's degree. Requests for tuition waivers must be approved by the GSBS Office.

## Probation and Dismissal

GSBS students are required to maintain a minimum overall grade point average (GPA) of 3.0. If a student fails to maintain the required minimum GPA, she or he will be placed on academic probation.

- Students may also be placed on probation for not completing the Core Courses within the first semester.
- Students may not drop a Core Course for academic reasons (reasonable exceptions will be made for sickness, etc., at the discretion of the GSBS Dean).
- Students receiving a grade of C or below in Core Course I, II or III will be required to repeat the course.
- Students receiving grades of C or below in two or more Core Courses will be at risk of dismissal.
- Students who do not complete the required core courses by the end of the second year (which includes the 5 core courses and the Responsible Conduct of Research) will be at risk of dismissal.

## Interdisciplinary Course Descriptions

### KEY:

- (F) Face-to-face
- (O) Online
- (H) Hybrid (combination of face-to-face and online)
- (V) Variable Credit

## Program and Concentration Specific Information Course Descriptions

**GSBS 5000 Interprofessional Collaborative Practice (0:0:0,O)** An introduction to broad concepts related to four interprofessional core competencies for healthcare providers: understanding roles and responsibilities; interprofessional communication; interprofessional teams and teamwork; and values and ethics for interprofessional practice. A module on electronic health records is also included. Course is required for all new GSBS students matriculated in a degree-granting program. (O)

**GSBS 5098 Techniques in Biomedical Research (V1-9,0,V3-27,F)** Through rotations in different laboratories, students will be introduced to fundamental principles and techniques in basic biomedical research. (F)

**GSBS 5099 Topics in Biomedical Sciences (V1-9,F)** Specific areas in biomedical sciences or related research not normally included in other courses. (F)

**GSBS 5101 Responsible Conduct of Research (1:1:0,F)** This course will address the regulatory and ethical environment of today's biomedical research as well as such topics as authorship and data management. The class format is lectures and case discussions. Course is required for all GSBS students. (F)

**GSBS 5102 How to be a Scientist: Professional Skills for the Biomedical Sciences Graduate Student (1:1:0,F)** Teaches useful concepts in the scientific professionalism that might not be learned elsewhere: how science is conducted in the United States and at TTUHSC, the importance of oral communication in science and tips for teaching in a science classroom. (F)

**GSBS 5174 Core IV: Biomedical Seminar Series (1:1:0,F)** Students will attend and participate in seminars. (F, IVC)

**GSBS 5201 Scientific Writing in the Biomedical Sciences (2:2:0,F)** Tactics for effective writing and communication in the biomedical sciences. Instruction will focus on the process of writing and publishing scientific manuscripts and writing fellowship applications. Students will complete short writing and editing exercises that focus on tactics of effective, clear, and concise writing, and prepare a manuscript or application in their area of study. (F)

**GSBS 5275 Core V: Introduction to Biomedical Research (2:0:0,F)** Introduces the first-year graduate student to the fundamental principles and techniques in basic biomedical research. (F)

**GSBS 5303 Introduction to Clinical Research (3:3:3,F)** Students will be involved in all aspects of preparation for and execution of prospective human studies and retrospective chart reviews. The didactic training deals with the regulations and ethical considerations related to research in humans, the process of obtaining approval for a study and the requirements associated with conducting a study. Prerequisites include the required courses in the first year GSBS Curriculum and preferably at least one laboratory rotation. (F)

**GSBS 5310 Introduction to Statistical Methods in the Biomedical Sciences (3:3:0,F)** Provide students explanation and application of classical test theory involving univariate statistics. The course will include discussion about classical test theory (p values, scales of measurement, assumptions of analyses, etc.) and application of this theory for various statistical analyses, such as t tests, anova, correlation. There will be a small introduction to non-parametric analyses. (F)

**GSBS 5350 Laboratory Methods in the Biomedical Sciences (3:3:0,F)** Introduces the first-year graduate student to the fundamental principles and techniques in basic science research. Following a lecture and/or a laboratory demonstration, students conduct a well-defined laboratory exercise and provide a written report on the results. (F)



**GSBS 5372 Core II: Cells (3:3:0,F)** The structure/function relationships that underlie basic cellular processes, including translation, protein trafficking, cytoskeletal organization and motility, cell adhesion, and cell division. Required for first year students. (F, IVC)

**GSBS 5373 Core III: Genes (3:3:0,F)** Teaches essential scientific concepts underlying the field of Molecular Biology and Molecular Genetics. Required for first year students. (F, IVC)

**GSBS 5399 Topics in Biomedical Sciences (3:0:0,F)** Specific areas in biomedical sciences or related research not normally included in other courses. May be repeated for credit. (F, IVC)

**GSBS 5471 Core I: Molecules (4:4:0)** This course offers a broad coverage of biochemistry with an emphasis on structure and function of macromolecules, biosynthesis of small molecule precursors of macromolecules, and the pathways of intermediary metabolism. Required for first year students. (F, IVC)

# Biomedical Sciences PhD Concentration in Biochemistry, Cellular and Molecular Biology

## Biomedical Sciences PhD Concentration in Biochemistry, Cellular and Molecular Biology

Vadivel Ganapathy, Ph.D., Chairperson for the School of Medicine Department of Cell Biology & Biochemistry

Jeffrey Thomas, Ph.D., Graduate Advisor

### About the Concentration

[Click Here to View Concentration Guidelines for Biochemistry, Cellular and Molecular Biology](#)

Biochemistry, Cellular and Molecular Biology will prepare students for careers in biochemistry, cellular, developmental, and molecular biology. Employment opportunities for graduates include traditional university professorships, positions in the biotechnology industry, and governmental appointments. The curriculum centers around five courses: the three GSBS core courses (Genes, Molecules, Cells) and the two advanced courses (Advanced Cell Biology and Advanced Protein Biochemistry). During the first year of study, the student will progress through a minimum of three laboratory rotations in order to determine his or her research interest. Dissertation topics can be pursued in the following areas: regulation of gene expression, RNA processing, cell cycle, DNA repair, cell and molecular biology of intercellular communication, regulation and function of the actin and microtubule cytoskeleton, cell and molecular biology of stem cells, embryo implantation, molecular mechanisms of epididymal sperm function, proliferation and differentiation of gonadal cells, molecular basis of gamete interactions, molecular regulation of ovarian development and function, development and regeneration of the nervous system, genetics of human cancer and congenital human disorders, diagnosis and treatment of human cancer, morphogenesis, developmental genetics, embryonic development, cellular genetics, cell biology of epithelia, immune privilege and transplantation, molecular mechanisms of ABC transporters in cholesterol homeostasis and multidrug resistance of cancer cells, aging, neurodegenerative diseases, oxidative stress, neurogenetics, mechanisms of hormone action, biochemistry of neoplasia, biochemistry of membranes, mechanisms of enzyme action, molecular mechanisms of human diseases, translational regulation, RNA and protein quality control, protein interactions in health and disease, molecular aspects of the communication between colonic bacteria and the host, ketogenesis in colon and its relevance to colitis and colon cancer, amino acid transporters in inflammation and cancer, the iron-overload disease hemochromatosis as a risk factor for cancer and metastasis, protein amyloidogenesis, molecular mechanisms of kidney disease, gut microbiota and the kidney, renal lipid metabolism and lipotoxicity, helicase-like transcription factor in reproduction and colon cancer, prostate cancer metastasis, tumor microenvironment in cancer progression, neurodegenerative diseases, and drug discovery.

Biochemistry, Cellular and Molecular Biology sometimes offers a research track for master's students; it is designed for students who need extra preparation for the Ph.D. program or whose career track is geared toward technical or staff level positions in industry or universities. Students undertake study and research in similar areas as that of the Ph.D. program.

Students with undergraduate degrees in biology and chemistry are well suited for this concentration. Please contact GSBS at 806.743.2556 for more information concerning admissions for M.S. and Ph.D.

## Biomedical Sciences PhD Concentration in Biochemistry, Cellular and Molecular Biology Course Descriptions

**GBCM 5113 Selected Topics in Cell (1:1:0,F)** Topics vary from semester to semester and reflect the research interests of the faculty. Recent offerings have included oncogenes and molecular biology, hormone action, and advanced genetics. May be repeated provided that different topics are covered for each registration.

**GBCM 5130 Research Presentation Skills (1:0:0,F)** A comprehensive coverage of the most widely used research presentation methods used at national and international meetings. The course is offered at the request of a faculty member or the request of a student or group of students. May be repeated with credit.

**GBCM 5213 Selected Topics in Cell (2:2:0,F)** Topics vary from semester to semester and reflect the research interests of the faculty. Recent offerings have included oncogenes and molecular biology, hormone action, and advanced genetics. May be repeated provided that different topics are covered for each registration.

**GSBS 5275 Core V: Introduction to Biomedical Research (2:2:0,F)** Introduces the first-year graduate student to the fundamental principles and techniques in basic biomedical research.

**GBCM 5313 Selected Topics in Cell (3:3:0,F)** Topics vary from semester to semester and reflect the research interests of the faculty. Recent offerings have included oncogenes and molecular biology, hormone action, and advanced genetics. May be repeated provided that different topics are covered for each registration.

**GBCM 6055 Laboratory Methods (V1-6,F)** Taken as (1) hands-on introduction to the laboratories in which a student may wish to do thesis or dissertation research, or (2) after a student is well established in his or her dissertation research, additional rotations can be done to gain expertise in techniques applicable to the student's research but not available in the faculty advisor's laboratory. Repeatable if different methods are covered for each registration. Prerequisite: Consent of instructor.

**GBCM 6101 Biochemistry Conference (1:1:0,F)** Informal conferences between faculty and students considering topics of current interest in biochemistry not normally included in other courses. Literature search, evaluation, organization, writing, and oral presentation by the student are emphasized. Different topic each semester. May be repeated for credit.

**GBCM 6135 Topics in Biochemistry (1:1:0,F)** Lectures in specific areas of biochemistry not normally included in other courses. May be repeated for credit with change of content. Prerequisite: Consent of instructor.

**GBCM 6235 Topics in Biochemistry (2:2:0,F)** Lectures in specific areas of biochemistry not normally included in other courses. May be repeated for credit with change of content. Prerequisite: Consent of instructor.

**GBCM 6320 Advanced Cell Biology (3:3:0,F)** This will cover advanced topics in cell biology and is designed for senior students who have completed introductory cell biology courses. The topics covered will include regulatory mechanisms that control the development of metazoan organisms, cell cycle regulation, cancer, and reproductive and stem cell biology. Prerequisite: GSBS core curriculum or consent of course director.

**GBCM 6333 Advanced Protein Biochemistry (3:3:0,F)** Teaches advanced concepts in the field of protein biochemistry with emphasis on the fundamentals of protein biosynthesis, structure, and folding; methods of characterizing protein structural properties and conformation; and techniques for purifying proteins with diverse properties. Prerequisite: Successful completion of the GSBS common first year curriculum or consent of the course director.

**GBCM 6335 Topics in Biochemistry (3:3:0,F)** Lectures in specific areas of biochemistry not normally included in other courses. May be repeated for credit with change of content. Prerequisite: Consent of instructor.

**GBCM 6535 Topics in Biochemistry (5:5:0,F)** Lectures in specific areas of biochemistry not normally included in other courses. May be repeated for credit with change of content. Prerequisite: Consent of instructor.

**GBCM 7000 Research (V1-12, F)**

**GBCM 7101 Seminar (1:1:0,F)** Students will attend and participate in departmental seminars.

**GBCM 8000 Doctoral Dissertation (V1-12,F)**

# Biomedical Sciences PhD Concentration in Immunology and Infectious Diseases

## Biomedical Sciences PhD Concentration in Immunology and Infectious Diseases

Afzal Siddiqui, Ph.D., Professor and Chair for the School of Medicine Department of Immunology and Molecular Microbiology

Joe A. Fralick, Ph.D., Graduate Advisor

### About the Concentration

[Click Here to View the Concentration Guidelines for Immunology and Infectious Diseases](#)

Immunology and Infectious Diseases is designed to graduate exceptionally well trained professionals who possess the necessary background and experience for a career in research and teaching in Immunology and Infectious Diseases. Applicants are urged to possess research experience and should have a basic knowledge of microbiology and prior course work in several disciplines of biological sciences. Prior coursework in certain areas such as Microbiology (General and Pathogenic), Cell Biology, Immunology, and Biochemistry, though not a requirement, is helpful. Students with deficiencies in these areas may be admitted and required to enroll in these classes as part of their first year of graduate school.

Students have the opportunity to rotate through research laboratories (three are recommended, but not a requirement) to broaden their education and research experience, and to assist in the identification of a field of specialization for their thesis or dissertation research. Major areas of current research activities include: microbial pathogenesis, bacterial gene regulation, biofilms, multi-drug resistance, immunology (cancer and infectious diseases, tumor antigen identification, vaccines and phage and immunotherapy).

For further information, see <https://www.ttuhsu.edu/medicine/immunology-molecular-biology/>.

## Biomedical Sciences PhD Concentration in Immunology and Infectious Diseases Course Descriptions

**GIID 5181 Select Topics in Immunology/ID (1:1:0,F)** Prerequisite: Biomedical Sciences core curriculum or consent of instructor. Self-study courses provide students with a specialized topic within their area of interest that is not typically offered within the Texas Tech University system. Participants must agree upon objectives, grading criteria, and deadlines.

**GIID 5281 Select Topics in Immunology/ID (2:2:0,F)** Prerequisite: Biomedical Sciences core curriculum or consent of instructor. Self-study courses provide students with a specialized topic within their area of interest that is not typically offered within the Texas Tech University system. Participants must agree upon objectives, grading criteria, and deadlines.

**GIID 5381 Select Topics in Immunology/ID (3:3:0,F)** Prerequisite: Biomedical Sciences core curriculum or consent of instructor. Self-study courses provide students with a specialized topic within their area of interest that is not typically offered within the Texas Tech University system. Participants must agree upon objectives, grading criteria, and deadlines.

**GIID 6324 Molecular Biol/Patho Bacteria (3:3:0,F)** Prerequisite: Core curriculum, GIID 6610 Fundamental Microbiology and Immunology, or consent of instructor. Lectures and discussions concerning the molecular analysis of mechanisms by which pathogenic bacteria produce infections. The regulation and expression of virulence factors are emphasized. The course also includes writing an NIH-style grant proposal. Students may choose to write their proposals on any virulence related subject. They are also required to present and successfully defend their proposals.

**GIID 6325 Advances in Virology (3:3:0,F)** Prerequisite: Core curriculum, GIID 6610 Fundamental Microbiology and Immunology, or consent of instructor. Covers a broad range of topics including virus/host interactions, molecular pathogenesis of latent, persistent or cytolytic virus infections, and research strategies to treat and prevent viral infections.

**GIID 6329 Advances In Immunology (3:3:0,F)** Prerequisite: Core curriculum, GIID 6610 Fundamental Microbiology and Immunology, or consent of the instructor. This 3 credit course provides students with an advanced course in the discipline of immunology. The course includes the peer review process as it relates to specific aspects of immunology and includes immunologic based investigations in the fields of cancer, host defense, and infectious diseases. The course is literature driven, utilizing both manuscripts and research proposals as examples to understand the peer review process and attempts to bridge the gap between the textbook and the literature. Both written oral participation by the students on specialized topics is required. Students will be responsible for a written research proposal based on the present NIH R01 format.

**GIID 6335 Pathogenesis of Infect Disease (3:3:0,F)** Prerequisite: Core curriculum, GIID 6610 Fundamental Microbiology and Immunology, or consent of

the instructor. A study of the processes by which microorganisms produce disease in humans and how the host responds. The bacterial mycological and parasitic aspects of infectious disease will be taught. Students will be expected to understand all major bacterial, fungal, and parasitic diseases. Students must understand the mechanisms by which the virulence factors of these organisms allow them to cause their respective diseases.

**GIID 6340 Mucosal Immunology (3:3:0,F)** Prerequisite: Core curriculum, GIID 6610 Fundamental Microbiology and Immunology, or consent of instructor. This 3 hour credit course provides students with an advanced course in the discipline of mucosal immunology. This course will utilize didactic lectures, literature reviews and faculty-led discussions to expose the students to basic concepts of mucosal immunology with particular emphasis on the intestinal immune system. Both written and oral participation by the students on specialized topics is required. Students will select and present various cutting-edge topics in mucosal immunology as well as submit a written review on a current topic related to mucosal immunology.

**GIID 7000 Research (V1-12, F)**

**GIID 7101 Immuno/Infec Diseases Seminar (1:1:0,F)** Prerequisite: GSBS 5174 or consent of instructor. Weekly seminar series designed to provide training in research data presentation and analysis. This course will allow students to develop their presentation skills by providing experiences in both written and oral communication, presentations, and critiques. Use of visual aid equipment and software is mandatory.

**GIID 8000 Doctor's Dissertation (V1-12,F)**

# Biomedical Sciences PhD Concentration in Molecular Biophysics

## Biomedical Sciences PhD Concentration in Molecular Biophysics

Lan Guan, Ph.D., Interim Chair

Pablo Artigas, Ph.D., Graduate Advisor

### About the Concentration

[Click Here to View the Concentration Guidelines for Molecular Biophysics](#)

The concentration's main research interest is focused on membrane proteins ranging from their structure to their function in health and disease, and utilizes both cellular and molecular approaches to study these areas. The research involves, among others, the following topics: (a) ion transport and the role of ligand- and voltage-gated potassium channels in normal physiological and pathophysiological conditions; (b) structure/function correlations and structural modeling of ion channels and transporters; and (c) structure-function studies of proteins involved in membrane traffic and fusion. State-of-the-art approaches and techniques such as X-ray crystallography, molecular spectroscopy, patch-clamp electrophysiology, and confocal microscopy are used to carry out the various research endeavors. The School of Medicine Department of Cell Physiology and Molecular Biophysics has established these research efforts.

## Biomedical Sciences PhD Concentration in Molecular Biophysics Course Descriptions

**GMBP 5221 EBBM (2:2:0,F)** This is a parallel course to GMBP 5321 (Biochemistry and Biophysics of Membranes) with two credit hours. The main goal is to bridge the knowledge acquired in the classroom and experimental attitudes and skills necessary for dissertation work. The students will be involved in planning, performing, and analyzing classic experiments in the fields of biochemistry and biophysics of membranes, and the experiments will be carried out in several laboratories housed in the Department of Cell Physiology and Molecular Biophysics. Prerequisite: Concurrent enrollment in GMBP 5321.

**GMBP 5302 Human Physiology (3:3:0,F)** This introductory graduate course provides the student with a basic understanding of the organ systems of the human body, including the functions, regulation and interactions. No prerequisites are required.

**GMBP 5321 BBM (3:3:0,F)** This is a 3 credit hour course to introduce cell membranes and membrane proteins stressing the physical and chemical bases of cellular functions. The course starts with a review of physical chemistry and common biochemical and biophysical approaches applied to biology, and then focuses on major classes of membrane transport proteins, their structures and mechanisms of function. Lecture materials are supplemented by readings from textbooks, review articles and original research papers, as well as discussion of current research in the instructors' laboratories. Prerequisite: consent of instructor. This course may be taken with GMBP 5221.

**GMBP 5350 Laboratory Methods in Molecular Biophysics (3:0:3,F)** Fundamental principles of physiology and molecular biophysics are explored through a series of hands-on laboratory exercises. Numerous techniques common to research in many fields will be introduced.

**GMBP 5360 Lab Rotation in GMBP (3:0:3,F)** Prerequisite: Consent of instructor. Students work in a specific laboratory assisting an ongoing research project or conducting an independent research effort.

**GMBP 5904 Systems Physiology (9:4:0,F)** This course provides the student with a basic understanding of the organ systems of the human body. Their functions, regulation and interactions are emphasized.

**GMBP 6105 Adv. Topics in GMBP (1:1:0,F)** Prerequisite: Consent of instructor. Advanced training in a specialized area of cell physiology and molecular biophysics. May be repeated for credit with change in content.

**GMBP 6205 Adv. Topics in GMBP (2:2:0,F)** Prerequisite: Consent of instructor. Advanced training in a specialized area of cell physiology and molecular biophysics. May be repeated for credit with change in content.

**GMBP 6305 Adv. Topics in GMBP (3:3:0,F)** Prerequisite: Consent of instructor. Advanced training in a specialized area of cell physiology and molecular biophysics. May be repeated for credit with change in content.

**GMBP 7000 Research (V1-12,F)**

**GMBP 7101 GMBP Seminar (1:1:0,F)** Showcases internationally acclaimed researchers and provides the student with the most current information on a variety of interesting topics in molecular biophysics, as well as an introduction to state-of-the-art techniques and instrumentation.

**GMBP 7102 Readings in GMBP (1:1:0,F)** This course is designed to complement the Molecular Biophysics Seminar Series and provide a forum for the students to become familiar with some of the speakers' publications. The readings course will examine the hypothesis that was tested, the techniques employed, the most important results obtained, and the conclusions that were drawn from the study. The course requires that the students further develop

skills for reading, analysis, integration of knowledge and oral presentation of original science articles and reviews. May be repeated for credit.

**GMBP 7103 Advanced Topics in Molecular Biophysics (1:1:0,F)** This course gives the student experience in organizing and presenting lectures. The overall objective is to assist the student in developing the skills required to teach in any area of cell physiology and molecular biophysics.

**GMBP 8000 Doctoral Dissertation (V1-12,F)**

# Biomedical Sciences PhD Concentration in Translational Neuroscience and Pharmacology

## Biomedical Sciences PhD Concentration in Translational Neuroscience and Pharmacology (GTNP)

Volker E. Neugebauer, M.D., Ph.D., Chairperson for the School of Medicine Department of Pharmacology and Neuroscience

Michael Blanton, Ph.D., GSBS Senior Associate Dean, Graduate Advisor

### About the Concentration

[Click Here to View Concentration Guidelines for Translational Neuroscience and Pharmacology](#)

The Department of Pharmacology and Neuroscience offers graduate programs leading to the M.S. and Ph.D. degree in Translational Neuroscience and Pharmacology. Graduate study may be pursued in several areas, including systems and cellular neuropharmacology and neuroscience, molecular pharmacology, biochemistry and neurobiology of disease. The newly established Center of Excellence for Translational Neuroscience and Therapeutics provides valuable opportunities for interdisciplinary basic science and translational research. Clinically relevant research topics include pain mechanisms and therapies in various preclinical models (arthritis, multiple sclerosis (MS), HIV, chemotherapy- and nerve injury-induced neuropathic pain), alcohol abuse disorders, alcohol- and oxidative stress-induced damage to the developing brain and neurodegeneration, neurodegenerative disorders such as Alzheimer's Disease, anti-neoplastic drug development and mechanisms of drug resistance.

The Ph.D. degree generally takes four to five years to complete all the requirements. The first year consists primarily of coursework (Fall Core Curriculum and Spring Advanced Courses) as well as lab rotations. During the remaining period of study, the student completes additional advanced course work, takes a qualifying examination, and completes a Ph.D. dissertation based on his or her original research.

The faculty members of the program seek to foster a creative and productive research atmosphere and to equip students with the intellectual tools they will need to succeed as investigators and teachers. Graduates can expect to enter careers in academic institutions, industry, or government agencies.

Opportunities are also available for postdoctoral training in the research areas listed above.

## Biomedical Sciences PhD Concentration in Translational Neuroscience and Pharmacology Course Descriptions

**GTNP 5101 Topics in Translational Neuroscience and Pharmacology (1:1:0,F)** Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

**GTNP 5201 Topics in Translational Neuroscience and Pharmacology (2:2:0,F)** Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

**GTNP 5225 Tech in Neurosci & Pharm Rese (2:0:6,F)** Standard experimental techniques used in pharmacological research are explored through a series of hands-on laboratory exercises. Numerous techniques common to research in many fields will be introduced.

**GTNP 5301 Topics in Translational Neuroscience and Pharmacology (3:3:0,F)** Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

**GTNP 5303 Principles of Neuro & Pharm (3:3:0,F)** Prerequisite: consent of instructor. This course will investigate drug actions on the nervous system. Focusing on translation of basic neuroscience into the discovery of therapies in the treatment of brain disorders, including elucidating mechanisms by which drugs act in disease, also the use of drugs as tools to probe the function of neurons, synapses, and neural circuits. The course will introduce critical thinking skills by linking textbook knowledge to current literature, using the Journal Club submission format to encourage in-depth critical analyses of high impact, peer-reviewed articles.

**GTNP 5312 Medical Pharmacology I (3:8:0,F)** A study of pharmacology with emphasis on mechanisms of drug action, interaction, and therapeutics.



**GTNP 5326 Phm Autonomic Nervous System (3:3:0,F)** A conceptual study of drugs which alter the function of the autonomic nervous system. Emphasis will be on mechanisms by which drugs affect transmitter synthesis, release, uptake, and metabolism as well as receptor function.

**GTNP 5336 Molecular and Cellular Pharmacology (3:3:0,F)** Course focuses on experimental methods employed in pharmacological research. Topics include expression cloning, photo-affinity labeling, gene microarrays, patch clamp recording, etc. This course will consist of selected topics, lectures and student discussions.

**GTNP 5337 Neuropsychopharmacology (3:3:0,F)** A structured in-depth study of specific topics concerning neurochemical pharmacology, behavioral pharmacology, and neuropsychopharmacology. Topics to be studied will vary each semester. The course will consist of lectures, discussions, and oral presentations of original papers by the class.

**GIDN 5910 Integrated Neuroscience (9:8:1,F)** This cooperative, interdepartmental effort offers a detailed study of the nervous system. Students examine both gross and fine structure and function from the subcellular through the behavioral level.

**GTNP 7000 Research (V1-12,F)**

**GTNP 7101 Trans Neurosci/Phm Seminar (1:1:0,F)** This course will enhance student skills in scientific public speaking through a series of seminars that are critiqued by Translational Neuroscience & Pharmacology faculty. Weekly seminars are designed to provide training in research data presentation and analysis or critical evaluation and presentation of a manuscript in press. A required course for Translational Neuroscience & Pharmacology graduate students, it is taken during the fall and spring semesters. The course is designed such that students must interact by participating in the question and answer component of all seminars as well as during lunch with invited speakers. Grades are determined by faculty evaluation of seminar presentation and by participation during seminars.

**GTNP 7102 Readings in GTNP (1:1:0,F)** This course is designed to complement the Translational Neuroscience and Pharmacology seminar series and provide a forum for the students to become familiar with some of the speakers publications. The readings for the course will examine the hypothesis that was tested, the techniques employed, the most important results obtained, and the conclusions that were drawn from the study. The knowledge and oral presentation of the original science articles are reviewed. May be repeated for credit.

**GTNP 8000 Doctoral Dissertation (V1-12,F)**

# Masters of Biotechnology

## Biotechnology, M.S.

Abilene	Lubbock
<b>Sanjay Srivastava, Ph.D.</b> , GSBS Associate Dean and Abilene Director	<b>Susan Bergeson, Ph.D.</b> , GSBS Associate Dean and Lubbock Director
<b>Irene La-Beck, Ph.D.</b> , Abilene Graduate Advisor	<b>Ina Urbatsch, Ph.D.</b> , Lubbock Graduate Advisor

## About the Program

*[Click Here to View Program Guidelines for Biotechnology](#)*

This program is an interdisciplinary degree supported by all basic science departments in the Texas Tech University Health Sciences Center (TTUHSC) located on Abilene and Lubbock campuses. The biomedical sciences track is a 21-month curriculum consisting of two terms (nine months) of coursework and 12 months of full-time laboratory research. It is typically a non-thesis degree with an optional thesis at the end of the second year by arrangement with the advisor. The research component may be completed either at the TTUHSC campus or at a biotechnology-related academic or government laboratory. Students who choose to do their research at the TTUHSC campus will work with a member of the biotechnology graduate faculty. All biotechnology graduate faculty have active research programs that emphasize use of biotechnology methods. Prerequisites for the program include a bachelor's degree in science with at least one year of organic chemistry.

## Biotechnology Core Curriculum

Students entering the Biotechnology master's degree program complete a core curriculum requirement in the first year, and elective requirements in year two. The first semester of the first year, students take the same Biomedical Sciences core curriculum required of Ph.D. students, as well as Biotechnology Lab Methods. Core curriculum courses include Molecules, Cells, Genes, and Biomedical Seminar Series. The second semester of the first year, students are required to complete the Biotechnology Core courses which include Introduction to Biotechnology, Biomedical Informatics, Biotechnology Seminar, and Techniques in Biotechnology. For more information, please see the **Biotechnology Guidelines**.

## Admissions

Applicants apply on the GSBS application website, <http://www.bioraider.com>, create an account and choose the program application. Applicants also select the campus, Lubbock or Abilene.

The Biotechnology Program admits on a rolling admissions basis. As an application is completed, it is processed and sent to specific campus Biotechnology Admissions Committee.

A completed application consists of the following items: submitted application, unofficial transcript(s) from U.S. institutions and/or course-by-course transcript evaluation, GRE (required for international applicants), at least two letters of recommendation, essay/statement of purpose, resume/CV, application fee.

Incomplete applications at the application deadline are not and will not be processed or reviewed for admission. No exceptions are made.

Application materials are processed and sent to the campus Biotechnology Admissions Committee for a holistic review. Each reviewer independently scores the application based on the materials presented in the application and an interview is scheduled with the applicant. These interviews may be in person or via video conferencing at the applicant's choice. The interview is conducted by a panel of available Biotechnology Admissions Committee members, usually consisting of at least 3-4 reviewers. During the interview, the committee scores the applicant on a number of metrics from the application (academic and non-academic) as well as the interview and ability to answer the interviewer's questions.

After the interview is complete, the interviewers submit their Biotechnology Applicant Scoring Form and their recommendations of admit or decline. If admit, a ballot is prepared by the campus Program Director or Graduate Advisor and submitted to the GSBS

## 99-Hour Rule

Purpose: To define enrollment limits sanctioned by the Texas Legislature and outline the process masters student approaching maximum limits.

Students who accumulate more than 99 credit hours may be required to pay non-resident tuition. Master's students may not reduce hours unless they are designated by the GSBS office as "off-campus" students. Students who are designated as off-campus students should review the guidelines under "semester of graduation" within the Enrollment section. Reduced enrollment hours may affect financial aid status and/or payroll FICA exemptions. **Students are encouraged to check with the financial aid office and the payroll office before taking the reduced hours.** International students should also check with the TTUHSC DSO to verify hours for compliance with the Department of Homeland Security. Typically, international students may only reduce hours in their last semester. Any exceptions must be approved and updated in SEVIS.

## Masters of Biotechnology Course Descriptions

**GBTC 5020 Biotechnology Laboratory Methods (1-3:0:3,F)** Introduces techniques fundamental to Biotechnology research. Successful mastery of basic laboratory techniques will provide students with the experience to understand methods commonly used in biotechnology and basic medical science research. Required course for Biotechnology Master's students for Fall, Year 1.

**GBTC 5199 Biotechnology Laboratory Report (1:0:15,F)** Biotechnology Master's students working in TTUHSC laboratories report their research by giving a professional oral presentation. At the beginning of the YR2 Fall Semester. Biotechnology students are required to form a committee consisting of at least three Biotechnology Faculty, which must include their mentor, one of the three course directors, and at least one other member of the Biotechnology Program. Meetings are required at least once.

**GBTC 5210 The Microbiome - Role in Health and Disease (2:2:0,F)** Focused on the role of microorganisms as active players in homeostasis and disease. Enrollment is only by permission of the instructor.

**GBTC 5211 Biotechnology Innovation & Commercialization (2:2:0,F)** Addresses the essentials for generating and implementing innovations in biotechnology from invention and patent laws to developing a product prototype and business plan. Enrollment is only by permission of the instructor.

**GBTC 5212 Fundamentals of Bacteriology (2:2:0,H)** The classification, structure, virulence and pathogenesis of the bacteria that cause human disease and the ways to control these organisms will be studied. The course is a Biotechnology elective offered any semester, but taken only by permission of the instructor.

**GBTC 5213 Fundamentals of Virology/Parasitology (2:2:0,H)** The classification, structure, virulence and pathogenesis of the parasites and viruses that cause human disease, as well as the epidemiology and control of infections will be taught. The course is a Biotechnology elective offered any semester, but taken only by permission of the instructor.

**GBTC 5214 Fundamentals of Immunology (2:2:0,H)** Cellular and molecular immunology, immunity against microbes, tumors and diseases caused by inappropriate immune responses will be the focus of study. The course is a Biotechnology elective offered any semester, but taken only by permission of the instructor.

**GBTC 5298 Biotechnology Internship Report (2:2:0,F)** Biotechnology Master's students completing internships off-campus report their research by giving a professional oral presentation using interactive technology. At the beginning of the YR2 Fall Semester, Biotechnology students are required to form a committee consisting of a least 3 Biotechnology Faculty, which must include their mentor, one of the three course directors, and at least on other member of the Biotechnology Program. Meetings are required at least once.

**GBTC 5299 Biotechnology Final Report (2:2:0,F)** In Spring semester Year 2, all Biotechnology Master's students are required to present two professional oral reports and a final written report to their 3 member faculty committee. The reports are expected to represent independent work by the student, conducted under the supervision of the mentor, and to be written and presented clearly and concisely in proper English.

**GBTC 5330 Immunology and Immunopathology (3:3:0,F)** The structure and molecular basis of immunological function will be taught, including: diagnostic tests using immunological reagents; mechanisms of resistance against microbial and neoplastic diseases; transplantation immunology; pathology of immune-mediated diseases; prevention of disease by vaccines; pharmacotherapeutic intervention in immunological processes; and contemporary topics in immunology. Enrollment is only by permission of the instructor.

**GBTC 5335 Vaccines, Blood and Biologics (3:3:0,F)** Teaches the current and emerging importance of vaccines and biologics as essential tools for the prophylaxis and treatment of a multitude of diseases. Enrollment is only by permission of the instructor.

**GBTC 5337 Techniques in Biotechnology Research (3:0:3,F)** In Spring semester of Year 1, students are required to rotate in a t least two laboratories of Biotechnology faculty members. Rotation 1 should begin immediately at the start of the semester and continue through the first one-half of the semester with rotation 2 starting immediately following and continuing to the end of the semester. The objective or lab rotations is to allow the student to learn multiple experimental techniques and approaches, and choose a faculty mentor in which to conduct his/her required research. Rotation plans should be confirmed with the course director and the GSBS Biotechnology Student Advocate before to ensure they are initiated and completed in full.

**GBTC 5338 Biochemical Methods (3:1:0,F)** Provides integrated approach to modern biochemical techniques and present methods used to manipulate a gene, purify and characterize the enzymatic properties of the encoded protein. Enrollment is only by permission of the instructor.

**GBTC 5340 Biology of Cancer (3:3:0,F)** Teaches essential processes underlying the biology of cancer, from the molecular and cellular bases of cancer, to clinical manifestations, to therapy. Prerequisites: Successful completion of the GSBS 5471, GSBS 5372, GSBS 5373, GSBS 5174 or consent of the course director(s). (F)

**GBTC 5350 Research and Molecular Pathology (3:3:0,F)** This course provides expertise necessary to design and interpret research data obtained

through the use of knowledge pertaining to pathology of human diseases and methods offered by modern pathology. Enrollment is only by permission of the instructor.

**GBTC 6000 Master Thesis (1-6:0:1-6,F)**

**GBTC 6001 Biotechnology Internship (1-9:0:1,F)** Research and training in a private-sector or government biotechnology laboratory (by prior arrangement with program director).

**GBTC 6101 Biotechnology Seminar (1:1:0,F)**

**GBTC 6202 Biomedical Informatics (2:0:2,F)** Provides a broad introduction to the field of bioinformatics in medical research. Emphasizes use of modern software packages and internet-based genomic and other databases to solve research problems. Personal laptop meeting the GSBS laptop guidelines is required. Prerequisite: GSBS 5373 or by permission of the instructor. Required course for Biotechnology Master's students for Spring, Year 1.

**GBTC 6301 Introduction to Biotechnology (3:3:0,F)** Broad coverage will be given to topics with high current interest and utility to the biotechnology industries. The course emphasizes application of technologies and is required for all Biotechnology Master's students in Year 1 Spring semester.

**GBTC 7000 Research in Biotechnology (1-9:0:1-9,F)**

# Masters of Graduate Medical Education Sciences

## Graduate Medical Education Sciences - GB-MS-GMDS

Dan Webster, Ph.D., Program Director and Graduate Advisor

### About the Program

[Click Here to View The Program Guidelines for Graduate Medical Education Sciences](#)

Graduate Medical Education Sciences is a two-year non-thesis Master of Science degree. It is designed for students whose goal is either a teaching career in the anatomical sciences or the acquisition of additional preparation for healthcare related professional schools.

Students take courses in the anatomical, biochemical and physiological sciences with the first-year medical students and complete projects in modern instructional methods and design. Additionally, they will participate in the teaching mission of the medical school as teaching assistants.

Students will be required to design and carry out an education project in anatomy, biochemistry or histology under the direction of a faculty advisor. The project will be designed according to the needs of the curriculum and matched to the interests of the students.

Prerequisites for the program include a bachelor's degree in any field, but must include typical science courses (chemistry, biology, zoology/animal science, etc.). A strong science background, including completion of an undergraduate biochemistry course, is encouraged.

### Graduate Medical Education Sciences Core Curriculum

Students entering the Graduate Medical Education Sciences master's degree program begin the first-year curriculum in early August. The Graduate School of Biomedical Sciences offers required core courses for Graduate Medical Education Sciences students throughout the two-year curriculum. This curriculum was designed to give all Graduate Medical Education Sciences students a foundation in medical sciences that would serve as a basis for further study in professional programs (Ph.D., M.D., D.D., etc) or to pursue a career in education. This curriculum is designed to accommodate students seeking a deeper experience in basic medical sciences including current theory of learning and delivery of medical education. Core curriculum courses will be taken during both years, and include Graduate Human Anatomy; Introduction to Biochemistry, Cell Biology, Inflammation & Infection; Introduction to Immunology, Hematology and Cardiovascular System; Teaching Assistant Rotations (Advanced Training in Anatomy, Histology & Embryology Education; Advanced Training in Biochemistry & Infectious Disease; and Advanced Training in Immunology, Hematology & the Cardiovascular System) Pedagogical Concepts in Medical Education, and Research Project. For more information please see the Graduate Medical Education Sciences Guidelines.

### Admissions

Applicants apply on the GSBS application website, Applicants apply on the GSBS application website, <http://www.bioraider.com> where they will create an account and choose the program application.

All applications must be submitted and all required supplemental items received by the application deadline.

A completed application consists of the following items: submitted application, unofficial transcript(s) from U.S. institutions and/or course-by-course transcript evaluation, GRE or MCAT, at least two letters of recommendation, essay/statement of purpose, description of teaching/counseling/research/ lab experience, resume/CV, GPA calculation, and application fee.

Incomplete applications at the application deadline are not and will not be processed or reviewed for admission. No exceptions are made.

After the application deadline, two members of the GMES (Graduate Medical Education Sciences) Admissions Committee reviews

the applications independently. Committee membership is comprised of GMES faculty members selected by the Program Director. Reviewers are assigned at random as the processing is completed and applications are sent out in batches of approximately 5 applications at a time per reviewer. Each reviewer then notifies staff if the applicant warrants an interview, should be waitlisted for interview, or outright rejected.

Each applicant is reviewed holistically, where GPAs, test scores (GRE or MCAT), letters, essay, and extracurricular activities are reviewed. The program requires applicants to calculate multiple GPAs on a GPA calculator: science and math GPA, overall GPA minus first 30 hours, and a single science weighted GPA. The multiple GPA calculations are used to look for patterns and trends in their academic history in addition to overall GPA. The committee scores each component of the application during their review process.

After all applications have been independently reviewed by two members of the GMES Admissions Committee, the entire committee meets to determine the final interview list, waitlist to interview, and the rejection list. The program interviews approximately 36 applicants each year to fill 15 to 18 slots in the class. If both independent reviewers arrived with different decisions, the committee will discuss until they arrive at the same conclusion. If both reviewers reached the same conclusion for an applicant, that decision stands. The initial lists are reviewed and ranked based on thoughts from each of the reviewers until all 36 interview slots are filled.

Interviews are then conducted over two days, either in person or via Zoom (video conferencing). Each applicant interviews with the entire GMES Admissions Committee for 15 minutes as a panel interview. The Applicant Scoring Rubric has a second section to score each applicant interview.

After all interviews are complete, the committee meets to conduct a final ranking. The top 15 to 18 applicants are selected in addition to a waitlist of 15 to 20 that is maintained until July. The top 15 to 18 are determined by a combination of average committee member scores after the interview and discussion on program fit. Once these two lists are determined, ballots are prepared for each applicant for final independent approval by the GSBS Admissions Committee.

## 99-Hour Rule

Purpose: To define enrollment limits sanctioned by the Texas Legislature and outline the process masters student approaching maximum limits.

Students who accumulate more than 99 credit hours may be required to pay non-resident tuition. Master's students may not reduce hours unless they are designated by the GSBS office as "off-campus" students. Students who are designated as off-campus students should review the guidelines under "semester of graduation" within the Enrollment section. Reduced enrollment hours may affect financial aid status and/or payroll FICA exemptions. **Students are encouraged to check with the financial aid office and the payroll office before taking the reduced hours.** International students should also check with the TTUHSC DSO to verify hours for compliance with the Department of Homeland Security. Typically, international students may only reduce hours in their last semester. Any exceptions must be approved and updated in SEVIS.

## Masters of Graduate Medical Education Sciences Course Descriptions

**GMDS 5001 Graduate Human Anatomy (1-9:1-9:0,F)** A highly integrated graduate course of human macroscopic anatomical study (including human dissection) which embodies the gross morphology of the body and coordinates it with the clinical, developmental, and educational approaches to the human body. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5002 Graduate Cell and Tissue Biology (1-9:1-9:0,F)** Graduate Cell and Tissue Biology is designed to provide students with fundamental information concerning the traditional areas of biochemistry, genetics, cell biology, and Tissue and Organ Histology. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5003 Graduate Systems Physiology (1-9:1-9:0,F)** A graduate course of human physiology study which provides the student with a basic understanding of the organ systems of the human body. Their functions, regulation and interactions are emphasized. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5004 Advanced Training in Anatomy Education (1-6:0:1,F)** Students will participate in the gross anatomy laboratories as teaching assistants and attend all pre-lab meetings in preparation for the lab sessions, as well as preparing the practical exams. Prerequisites: GMDS 5001, GMDS 5002, GMDS 5003. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5005 Advanced Training in Biochemistry & Histology Education (1-6:0:1,F)** Students will participate in histology laboratories as teaching assistants and attend all pre-lab meetings in preparation for the lab sessions, as well as preparing the practical exams. Prerequisites: GMDS 5001, GMDS 5002, GMDS 5003. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5006 Advanced Dissection Skills (1-6:0:1,F)** Students will review and conduct specialized dissections in the anatomy lab. The students will learn

and practice advanced dissection skills designed to prepare specific teaching materials to demonstrate anatomical structures. Prerequisites: GMDS 5001, GMDS 5002, GMDS 5003. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5007 Advanced Ultrasound Skills (1-3:0:1,F)** Students will learn to show how to utilize ultrasound imaging to visualize and teach advanced topics in anatomy and physiology Prerequisites: GMDS 5001, GMDS 5004. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5008 Advanced Training in Physiology Education (1-6:0:1,F)** Students will participate in physiology laboratories as teaching assistants and attend all pre-lab meetings in preparation for the lab sessions, as well as preparing the practical exams. Prerequisites: GMDS 5001, GMDS 5002, GMDS 5003. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5020 Introduction to Immunology, Hematology and Cardiovascular System (1-12:1-12:0,F)** Graduate Immunology, Hematology, and Cardiovascular is designed to provide students with fundamental information concerning the immune, hematopoietic and cardiovascular system. Normal function (histology and physiology) will be covered followed by disorders and pathophysiology, including infections, affecting each system. This will impart a deeper understanding that will allow students to achieve future success as either teachers or healthcare workers.

**GMDS 5021 Introduction to Biochemistry, Cell Biology, Inflammation & Infection (1-12:1-12:0,F)** Graduate Biochemistry, Cell Biology, Inflammation & Infection is designed to provide students with fundamental information concerning the traditional areas of biochemistry, genetics, cell biology, pharmacology, pathology and microbiology. The principles presented in this course will proceed from molecules to cells and then to tissues and organs, integrating structure and function in a way that will impart a deeper understanding that will allow students to achieve future success as either teachers or healthcare workers.

**GMDS 5022 Advanced Training in Immunology, Hematology & the Cardiovascular System (1-6:1-6:0,F)** Students will lead and participate in designated small-group review sessions, team-based learning sessions, simulations, and laboratory sessions for the medical school class, attend all lectures and designated laboratory sessions as teaching assistants, and participate in all pre-laboratory meetings in preparation for the laboratory sessions. Students will also proctor both the unit exams and the NBME final exam, as needed.

**GMDS 5023 Advanced Training in Anatomy, Histology & Embryology Education (1-6:1-6:0,F)** Students will participate in the gross anatomy and histology laboratories as teaching assistants, attend all pre-laboratory meetings, present at select pre-laboratory meetings, oversee prosection presentations during scheduled lab hours, attend all lectures in preparation for the laboratory sessions, assist in the preparation of practical exams, proctor exams, ultrasound sessions and STS sessions as needed, and schedule, organize, and conduct review sessions.

**GMDS 5024 Advanced Training in Biochemistry & Infectious Disease (1-6:1-6:0,F)** Students will lead and participate in designated small-group review sessions, team-based learning sessions for the medical school class, attend all lectures and designated laboratory sessions as teaching assistants, and participate in all pre-laboratory meetings in preparation for the laboratory sessions. Students will also proctor both the unit exams and the NBME final exam, as needed.

**GMDS 5099 Topics in Grad Med Ed Sciences (1-6:1-6:0,F)** Specific areas in Graduate Medical Education Sciences or related areas not normally included in other courses. May be repeated for credit with change of content. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5110 Surgical Gross Anatomy (1:1:0,F)** Introduction and overview to surgical approaches to different regions of the human body from a clinical perspective. Students will observe and assist surgeons with surgical dissections of cadavers. Prerequisite: GMDS 5001. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5120 How People Learn: Theory and Practice (1:1:0,F)** The overall goal is to show how to maximize learning skills in the health sciences with an emphasis on medical education. Individual differences in learning style will be used as examples of the application of Deliberate Practice to increase cognitive skills. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5121 Pedagogical Concepts in Medical Education (1:1:0,F)** The course is intended to provide a graduate-level foundation for understanding important concepts that guide current medical education pedagogy. To accomplish this goal, papers from literature will be selected by the instructors for reading and subsequent discussion by the group. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 5310 Educational Project in Biomedical Sciences (3:0:3,F)** Students will design and carry out an educational project related to topics in medical education. The project will be designed according to the needs of the medical courses and matched to the interest of the student. Registration restricted to students admitted to the Graduate Medical Education Sciences program.

**GMDS 6101 Seminar (1:1:0,F)** Seminar

**GMDS 7000 Research (1-9:0:1-9,F)** Research



# PhD in Pharmaceutical Sciences

## Pharmaceutical Sciences Ph.D.

Thomas Abbruscato, Ph.D., GSBS Senior Associate Dean and Chair, Pharmaceutical Sciences

Sanjay Srivastava, Ph.D., GSBS Associate Dean and Chair, Immunotherapeutics and Biotechnology

Abraham Al-Ahmad, Ph.D., Graduate Program Advisor

Laurence Wood, Ph.D., Assistant Graduate Program Advisor

## About the Program

[Click Here to View Program Guidelines for Pharmaceutical Sciences](#)

Pharmaceutical Sciences (offered on the Amarillo and Abilene campuses) encompass all those areas of pharmacy research that pertain to drug design, delivery, formulations, therapeutics and immunotherapeutics, and biotechnology. The faculty members of the department exhibit research interests and expertise in drug design and delivery, pharmacology, pharmaceuticals, pharmacokinetics, drug receptor modeling, molecular biology, biochemistry, pathophysiology, immunology and cancer biology and therapy, and medicinal chemistry. The graduate program in pharmaceutical sciences is designed to educate students for careers in pharmaceutical industry, academia, and federal agencies including the FDA and NIH. Admissions requirements include a degree in pharmacy, chemistry, biology, or related areas. Teaching and research assistantships are awarded on a competitive basis. The departmental courses are listed below. For more information contact Teresa Carlisle, graduate program coordinator, 806.414.9329 or email [teresa.carlisle@ttuhsc.edu](mailto:teresa.carlisle@ttuhsc.edu).

## Pharmaceutical Sciences Core Curriculum

Students entering the Pharmaceutical Sciences doctoral degree program are admitted as rotating students. A rotating student must select an advisor by the end of their first spring semester. Currently, master's students are admitted only as rotating students. They will complete two rotations within their first semester. Doctoral and Master's students enrolled in the Graduate Program in Pharmaceutical Sciences (GPPS) will complete the core curriculum in two years (by the end of the spring semester of their second year). This curriculum was designed to give all GPPS students a unified and coordinated foundation that would serve as a basis for further study in individual disciplines within the pharmaceutical sciences. This curriculum is designed to accommodate both doctoral and master's students who have declared interests in specific research areas. Core curriculum courses will be taken during the first two years, and include Biochemistry, Experimental Design and Biostatistics, Responsible Conduct of Research, Principles of Drug Action, Graduate Pharmaceutics, Basic Pharmacokinetics and Pharmaceutical Sciences Seminar Series. Doctoral students will complete the core curriculum with Physiology-Based Pharmacology. For more information please see the Core Curriculum Policy, here: [http://www.ttuhsc.edu/pharmacy/documents/pharmaceutical-sciences/Core\\_Curriculum.pdf](http://www.ttuhsc.edu/pharmacy/documents/pharmaceutical-sciences/Core_Curriculum.pdf).

## Admissions

Applicants apply on the GSBS application website, <http://www.bioraider.com> where they create an account and choose the program application and campus.

All completed applications received by the application deadline are reviewed by the Pharmaceutical Sciences Admissions Committee. Committee membership is comprised of six members selected by a nomination/election process by the program faculty.

A completed application consists of the following items: submitted application, unofficial transcript(s) from all U.S. institutions attended and/or course-by-course transcript evaluation from all international institutions attended, GRE, English Proficiency exam (for international applicants) at least two letters of recommendation, essay/statement of purpose, resume/CV, application fee.

Incomplete applications at the application deadline are not and will not be processed or reviewed for admission. No exceptions are made.

Committee members conduct a holistic application review. Members submit a rubric evaluating applicants on personal essay, letters

of recommendation, prior research experience and work history. The numerical rating is compiled into a weighted composite score to arrive at a final admission score.

Select applicants are interviewed and after the interview, the committee discusses the applicant (which includes the application, required supplemental items and interview) and votes to either forward to the GSBS Admissions Committee or deny admission. Voting requires a simple majority of committee members present, and a quorum is required for a meeting. All applicants recommended for admission are forwarded to the GSBS school-wide admissions committee for consideration for approval.

## 129-Hour Rule

### Purpose:

To define enrollment limits sanctioned by the Texas Legislature and outline the process for doctoral students approaching maximum limits. Master's students may not reduce hours unless they are designated by the GSBS office as "off-campus" students. Master's students that are designated as off-campus students should review the guidelines under "semester of graduation" within the Enrollment section. Reduced enrollment hours may affect financial aid status and/or payroll FICA exemptions. Students are encouraged to check with financial aid and the payroll office before taking the reduced hours. International students should also check with the TTUHSC DSO to verify hours for compliance with the Department of Homeland Security. Typically, international students may only reduce hours in their last semester. Any exceptions must be approved and updated in SEVIS.

1. Once a doctoral student has passed candidacy and accumulated 120 hours, the student may register for 3 hours each semester for up to one year.

Ex. 3 hours - Fall; 3 hours - Spring; 3 hours - Summer

NOTE: If student elects the 3-3-3 enrollment and does not complete the degree requirements within that period, the student must resume full-time status (9 hours per long semester).

2. Students accumulating 130+ hours may be charged out-of-state tuition (full-cost) and forfeit any GSBS state-funded Research Assistantship. The faculty mentor will be responsible for the student's salary once the student exceeds 130 semester credit hours.
3. Out-of-state tuition may be waived for students exceeding 130 hours if those students entered the doctoral program with excessive hours from a master's degree. Requests for tuition waivers must be approved by the GSBS Office.

## Qualifying Examination & Admission to Candidacy

For detailed information regarding the Qualifying Examination, see the [Qualifying Exam Guidelines](#).

## Dissertations

A dissertation is required of every candidate for a doctoral degree. The dissertation work must earn a grade of at least B in order to qualify the student for graduation.

Defenses may be scheduled at a suitable time after the dissertation (not necessarily the final copy) has been read by the advisory committee. Defenses should be scheduled during an active term and not between terms or during extended break periods. They are generally open to the public and considered open meetings. The dissertation copy is typically provided to the committee two weeks prior to the oral examination. The required forms noting the time, place, and other information pertaining to the examination are available on the GSBS website. The examination is conducted by the advisory committee and a representative of the GSBS Dean. All members of the committee participate fully in the examination and cast a vote. Faculty members other than members of the committee, including the Dean's representative, may participate in the examination, but have no vote in determining the outcome. At the conclusion of the examination, the Chairperson of the advisory committee will send the Dissertation Oral Signature Defense Form to the GSBS Office, giving the result of the examination.

The Graduate School of Biomedical Sciences strongly recommends that each student be required to present and defend a dissertation proposal before his or her committee early in the course of the research. The subject of the dissertation must be approved by the advisory committee and the GSBS Office at least four months before the candidate's proposed date of graduation. The dissertation must demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter and its background, and a high degree of skill in organizing and presenting the materials. The dissertation should embody a significant contribution of new information to a subject or a substantial reevaluation of existing knowledge, presented in a scholarly style. The work on the dissertation is constantly under the supervision of the advisory committee and any other faculty the committee or GSBS

Office may consider necessary. A copy of the dissertation should be presented to the committee members and the Dean's representative at least two weeks prior to the defense.

### Grading

Dissertation hours are graded with a CR except for the last semester in which a letter grade is assigned. At the instructor's discretion, a letter grade may be assigned to the last 12 hours of dissertation. The letter grade assigned for the written dissertation and oral presentation/defense is based upon evaluation by committee members using the Dissertation Rubric.

### Hours

Registration for at least 12 hours of 8000 is required for a doctoral dissertation. Once dissertation hours have begun, a student must be enrolled in such courses every semester until graduation unless granted an official leave of absence. Students may not enroll in dissertation courses before formal admission to a degree program by the GSBS Office.

### Reference Manual

Students may reference the **Thesis – Dissertation Manual**. All manuscripts must conform to the published policies. The final copy of the dissertation must be submitted electronically to the GSBS office. Dissertations must be accompanied by an abstract of no more than 350 words. GSBS does not require a bound copy, although additional copies may be required by the advisory committee. The GSBS Office recommends utilizing [www.thesisondemand.com](http://www.thesisondemand.com) to purchase bound copies, however any bindery is acceptable.

### ETD – Electronic Thesis & Dissertations

The final copy of the dissertation must be submitted electronically to the GSBS office along with the ETD Account Information for HSC Students. Detailed instructions for completing the ETD account information is available on the GSBS website. The GSBS will forward the documents to the TTU Library for archival on the ETD website.

### Fees

Early in the semester of graduation, the candidate will pay the HSC Bursar's Office a document fee to cover the cost of uploading and storing the dissertation to the ETD website.

### Dissertation Announcements

Department Coordinators should notify all GSBS faculty and the GSBS office of all defenses at least 6 weeks prior to the defense for posting to the GSBS on-line event calendar. Faculty interested in attending the defense at an off-site location should notify coordinators at least 4 weeks prior to the defense so room arrangements can be made and TechLink or Zoom secured. Two (2) weeks prior to the defense, coordinators should prepare and forward a copy of the **dissertation announcement template** to all GSBS faculty and students.

## PhD in Pharmaceutical Sciences Course Descriptions

**GPSC 5101 Topics in Pharmaceutical Sciences (1:1:0,F)** (1:1:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5112 Principles and Techniques in Structure Determination of Bioactive Molecules (1:1:0,F)** An Advanced analytical chemistry course. The course is designed to familiarize doctoral candidates with general principles of modern spectroscopy techniques including MS, UV, IR, and general chromatography, introduce the minimum data required to identify the structure of a macromolecule and interpret data produced from MS, HPLC, IR spectra. Course Prerequisite: Admission to the Pharmaceutical Sciences Graduate Program. Students must have passed GPSC 5410 General Biochemistry and GPSC 5504 Principles of Drug Action.

**GPSC 5113 Molecular Structure Determination by NMR Spectroscopy (1:1:0,F)** An advanced analytical chemistry course. The course is designed to familiarize doctoral candidates with general principles of Nuclear Magnetic Resonance spectroscopy techniques including <sup>1</sup>N, <sup>13</sup>C, 2D and 3D experiments, introduce the data required to assign the structure of a molecule including any stereochemistry/isomers, and interpret spectra produced from <sup>1</sup>H and <sup>13</sup>C and heteronuclei NMR. Course Prerequisite: Admission to the Pharmaceutical Sciences Graduate Program. Students must have passed GPSC 5410 General Biochemistry and GPSC 5504 Principles of Drug Action.

**GPSC 5201 Topics in Pharmaceutical Sciences (2:2:0,F)** (2:2:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5215 Advanced Course in Neurosciences (2:2:0,F)** An advanced course designed to provide an overview of different aspects of neurosciences. This course is especially designed for graduate students interested to develop their neuroscience expertise and also introduced to different aspects of neurobiology, including but not limited to neuroanatomy, neurodevelopment, neurophysiology, neuroimaging and neurological diseases. Course Prerequisite: This course is designed for students with a basic knowledge of human anatomy and physiology. Successful completion of Biochemistry (GPSC5410) and Principles of Drug action (GPSC5504) is mandatory.

**GPSC 5220 Drugs of Abuse (2:2:0,F)** This course is designed to teach the students the pharmacology of different classes of abused drugs and the physiologic and societal aspects of addiction. Course Prerequisite: Biochemistry and Principles of Drug Action. In addition, while it is not required it is highly recommended that Pharmacology is completed or nearly complete by the time the course starts.

**GPSC 5230 Experimental Design and Biostatistics (2:2:0,F)** Principle of experimental research design, theoretical and practical issues of measurements and data collection; biostatistics in research design and data analyses for graduate students pursuing pharmaceutical and biomedical researches. Course

Prerequisite: Admission to TTUHSC Graduate Program of Pharmaceutical Sciences

**GPSC 5301 Topics in Pharmaceutical Sciences (3:3:0,F)** (3:3:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5303 Topics in Pharmaceutical Sciences (3:3:0,F)** (3:3:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5304 Principles of Drug Action (3:3:0,F)** (3:3:0). Principles that govern drug action within the body (pharmacodynamics) as well as drug absorption, distribution, metabolism, and excretion (pharmacokinetics).

**GPSC 5307 Pharmaceutical Sciences Research Methods (3:0:3,F)** (3:3:3). A lecture and laboratory course designed to provide an overview of current research methods in pharmaceutical sciences under direct guidance of a faculty member.

**GPSC 5310 Drug Design and Discovery (3:3:0,F)** (3:3:0). Prerequisite: GPSC 5504. Overview of new methods for quantitative SAR, computer-aided drug design, mass screening, and combinatorial chemistry.

**GPSC 5311 Drug Development and Discovery (3:3:0,F)** The steps and processes involved in drug development and discovery. Course Prerequisite: N/A

**GPSC 5320 Drug Metabolism (3:3:0,F)** (3:3:0). Analysis of primary metabolic enzymatic systems involved in the clearance of drugs from the body and the mechanisms that regulate their activity.

**GPSC 5325 Medicinal Chemistry (3:3:0,F)** (3:3:0). A comprehensive study of the chemistry of drug molecules and their interactions to aid in the understanding of concepts such as drug discovery and design.

**GPSC 5326 Cancer Biology and Therapeutics (3:3:0,F)** This course is designed for graduate students studying molecular and cellular basis of cancer. The course offers principles of cancer biology from origin of cancers to therapeutic intervention principles. Admission to the Pharmaceutical Sciences Graduate Program and basic knowledge of biochemistry and cell biology are required. Permission from the advisor and the team leader are also required.

**GPSC 5330 Advanced Pharmacokinetics (3:3:0,F)** Advanced topics related to pharmacokinetics (PK) and pharmacodynamics (PD) of drugs and their metabolites with particular emphasis on modeling strategies appropriate for PK/PD research. Course Prerequisite: Basic Pharmacokinetics (GPSC 5329) and Course Director's Consent.

**GPSC 5350 Advanced Pharmaceutics (3:3:0,F)** (3:3:0). Prerequisite: Drug Delivery Systems 3 or equivalent. Quantitative treatment of reactions of pharmaceutical interest. Drug decomposition, approaches to stabilization and preservation, accelerated stability analysis, complexation, and micromeritics.

**GPSC 5356 Advanced Principles of Disease (3:3:0,F)** (3:3:0). Pathophysiological mechanisms at the molecular and cellular level. Lecture and discussion will cover the etiology, pathogenesis, functional changes, and clinical significance of general diseases.

**GPSC 5362 Pharmaceutical Regulatory Affairs (3:3:0,F)** Basic regulatory and Quality Assurance concepts. Course Prerequisite: N/A

**GPSC 5370 Biotechnology (3:3:0,F)** (3:3:0). An introduction to the area of molecular biology, genomics, and protein chemistry.

**GPSC 5375 Immunology (3:3:0,F)** The structural components of the human immune system; the cellular and molecular basis of immunological function; diagnostic tests using immunological reagents; mechanisms of resistance against microbial and neoplastic diseases; transplantation immunology; pathology of immune-mediated diseases; prevention of disease by vaccines; pharmacotherapeutic intervention in immunological processes; contemporary topics in immunology.

**GPSC 5410 General Biochemistry (4:4:0,F)** Chemical and molecular aspects of biological processes, including the chemistry of biomolecules, enzymology, bioenergy, biochemical control mechanisms, and molecular biology. Discussion of metabolic diseases and fundamentals of human nutrition.

**GPSC 5411 Graduate Pharmaceutics (4:4:0,F)** Covers the physical chemical principles for the development of safe and effective pharmaceutical dosage forms, fabrication of conventional liquid, solid and aerosolized dosage forms, fundamental of various drug delivery systems, and the process of drug development, discovery and commercialization. Course prerequisite: Admission to the Graduate Program of Pharmaceutical Sciences.

**GPSC 5429 Pharmacokinetics (4:4:0,F)** Introduces the basic principles of pharmacokinetics, including compartmental and physiological analysis of the time courses of drug absorption, distribution, and elimination, with an emphasis on the pharmacokinetic-based dosage-regimen design. Course prerequisite: Admission to the Graduate Program of Pharmaceutical Sciences.

**GPSC 5435 Physiology-Based Pharmacology (4:4:0,F)** This is an integrated course of physiology and pharmacology, with an introduction to clinical pharmacology. The emphasis will be on understanding drug actions at the molecular, cellular, organ and whole organism level for select classes of drugs.

**GPSC 5440 Biopharmaceutics (4:4:0,F)** Advanced treatment of the influence of dosage forms, route of administration, and dosage regimen on drug availability and newer technologies for targeting drug delivery to specific organs and cell types. Prerequisite: DDS 3rd and kinetics or equivalent.

**GPSC 5455 Graduate Pharmaceutics (4:4:0,F)** Physicochemical principles for the design and development of pharmaceutical dosage forms. Advanced instruction in solution, suspension, and semisolid dosage forms.

**GPSC 5504 Principles of Drug Action (5:5:0,F)** This introductory course is designed to facilitate understanding of fundamental concepts relating to drug action. It covers basic principles of pharmacology, toxicology, and medicinal chemistry. Course prerequisites include the admission to the Pharmaceutical Sciences Graduate Program, and students must have passed GPSC 5510 General Biochemistry. (F/IVC)

**GPSC 6000 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 6002 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 6003 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 7000 Pharmaceutical Sciences Research (1-12:0:1,F)** Pharmaceutical Sciences Research

**GPSC 7002 Pharmaceutical Sciences Research (1-12:0:1-12,F)** Pharmaceutical Sciences Research

**GPSC 7003 Pharm Sciences Research (1-12:0:1-12,F)** Pharmaceutical Sciences Research

**GPSC 7101 Pharmaceutical Sciences Seminar (1:0:1,F)** (1:1:0). Weekly seminar series designed to provide training in research data presentation and analysis.

**GPSC 7103 Pharmaceutical Sciences Seminar (1:0:1,F)** (1:1:0). Weekly seminar series designed to provide training in research data presentation and

analysis.

**GPSC 8000 Doctoral Dissertation (1-12:0:1-12,F)**

**GPSC 8002 Doctoral Dissertation (1-12:0:1-12,F)** Doctoral Dissertation

**GPSC 8003 Doctoral Dissertation (1-12:0:1-12,F)** Doctoral Dissertation

# Masters in Pharmaceutical Sciences

## Pharmaceutical Sciences M.S.

Thomas Abbruscato, Ph.D., GSBS Senior Associate Dean and Chair, Pharmaceutical Sciences

Sanjay Srivastava, Ph.D., GSBS Associate Dean and Chair, Immunotherapeutics and Biotechnology

Abraham Al-Ahmad, Ph.D., Graduate Program Advisor

Laurence Wood, Ph.D., Assistant Graduate Program Advisor

## About the Program

[Click Here to View Program Guidelines for Pharmaceutical Sciences](#)

Pharmaceutical Sciences (offered on the Amarillo and Abilene campuses) encompass all those areas of pharmacy research that pertain to drug design, delivery, formulations, therapeutics and immunotherapeutics, and biotechnology. The faculty members of the department exhibit research interests and expertise in drug design and delivery, pharmacology, pharmaceuticals, pharmacokinetics, drug receptor modeling, molecular biology, biochemistry, pathophysiology, immunology and cancer biology and therapy, and medicinal chemistry. The graduate program in pharmaceutical sciences is designed to educate students for careers in pharmaceutical industry, academia, and federal agencies including the FDA and NIH. Admissions requirements include a degree in pharmacy, chemistry, biology, or related areas. Teaching and research assistantships are awarded on a competitive basis. The departmental courses are listed below. For more information contact Teresa Carlisle, graduate program coordinator, 806.414.9329 or email [teresa.carlisle@ttuhsc.edu](mailto:teresa.carlisle@ttuhsc.edu).

## Admissions

Applicants apply on the GSBS application website, <http://www.bioraider.com> where they create an account and choose the program application and campus.

All completed applications received by the application deadline are reviewed by the Pharmaceutical Sciences Admissions Committee. Committee membership is comprised of six members selected by a nomination/election process by the program faculty.

A completed application consists of the following items: submitted application, unofficial transcript(s) from all U.S. institutions attended and/or course-by-course transcript evaluation from all international institutions attended, GRE, English Proficiency exam (for international applicants) at least two letters of recommendation, essay/statement of purpose, resume/CV, application fee.

Incomplete applications at the application deadline are not and will not be processed or reviewed for admission. No exceptions are made.

Committee members conduct a holistic application review. Members submit a rubric evaluating applicants on personal essay, letters of recommendation, prior research experience and work history. The numerical rating is compiled into a weighted composite score to arrive at a final admission score.

Select applicants are interviewed and after the interview, the committee discusses the applicant (which includes the application, required supplemental items and interview) and votes to either forward to the GSBS Admissions Committee or deny admission. Voting requires a simple majority of committee members present, and a quorum is required for a meeting. All applicants recommended for admission are forwarded to the GSBS school-wide admissions committee for consideration for approval.

## 99-Hour Rule

Purpose: To define enrollment limits sanctioned by the Texas Legislature and outline the process masters student approaching maximum limits.

Students who accumulate more than 99 credit hours may be required to pay non-resident tuition. Master's students may not reduce hours unless they are designated by the GSBS office as "off-campus" students. Students who are designated as off-campus students should review the guidelines under "semester of graduation" within the Enrollment section. Reduced enrollment hours may affect

financial aid status and/or payroll FICA exemptions. Students are encouraged to check with the financial aid office and the payroll office before taking the reduced hours. International students should also check with the TTUHSC DSO to verify hours for compliance with the Department of Homeland Security. Typically, international students may only reduce hours in their last semester. Any exceptions must be approved and updated in SEVIS.

## Thesis

The master's thesis is expected to represent independent work by the student, conducted under the supervision of the committee, and to be written clearly and concisely. As soon as the student's area for thesis research has been determined, an advisory committee will be appointed by the GSBS Office upon the recommendation of the advisory Chair. The committee must consist of at least three members of the TTUHSC Graduate Faculty. More than one disapproving vote from the committee members shall constitute failure of the examination. The student must earn a grade of B or better on thesis work to qualify for graduation. A copy of the thesis should be presented to the committee members and the Dean's representative at least two weeks prior to the defense.

### Grading

Thesis hours are graded with a CR except for the last semester in which a letter grade is assigned. At the instructor's discretion, a letter grade may be assigned to the last 6 hours of thesis.

### Hours

Registration for at least 6 hours of 6000 is required for the master's thesis. Once thesis hours have begun, a student must be enrolled in such courses every semester until graduation unless granted an official leave of absence. Students may not enroll in thesis courses before formal admission to a degree program by the GSBS Office.

### Reference Manual

Students may reference the **Thesis – Dissertation Manual**. All manuscripts must conform to the published policies. The final copy of the thesis must be submitted electronically to the GSBS office. Theses must be accompanied by an abstract of no more than 350 words. GSBS does not require a bound copy, although additional copies may be required by the advisory committee. The GSBS Office recommends utilizing [www.thesisondemand.com](http://www.thesisondemand.com) to purchase bound copies, however any bindery is acceptable.

### ETD – Electronic Thesis & Dissertations

The final copy of the thesis must be submitted electronically to the GSBS office along with the ETD Account Information for HSC Students. Detailed instructions for completing the ETD account information is available on the GSBS website. The GSBS will forward the documents to the TTU Library for archival on the ETD website.

### Fees

Early in the semester of graduation, the candidate will pay the HSC Bursar's Office a document fee to cover the cost of uploading and storing the thesis to the ETD website.

## Masters in Pharmaceutical Sciences Course Descriptions

**GPSC 5101 Topics in Pharmaceutical Sciences (1:1:0,F)** (1:1:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

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**GPSC 5113 Molecular Structure Determination by NMR Spectroscopy (1:1:0,F)** An advanced analytical chemistry course. The course is designed to familiarize doctoral candidates with general principles of Nuclear Magnetic Resonance spectroscopy techniques including <sup>1</sup>N, <sup>13</sup>C, 2D and 3D experiments, introduce the data required to assign the structure of a molecule including any stereochemistry/isomers, and interpret spectra produced from <sup>1</sup>H and <sup>13</sup>C and heteronuclei NMR. Course Prerequisite: Admission to the Pharmaceutical Sciences Graduate Program. Students must have passed GPSC 5410 General Biochemistry and GPSC 5504 Principles of Drug Action.

**GPSC 5201 Topics in Pharmaceutical Sciences (2:2:0,F)** (2:2:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5215 Advanced Course in Neurosciences (2:2:0,F)** An advanced course designed to provide an overview of different aspects of neurosciences. This course is especially designed for graduate students interested to develop their neuroscience expertise and also introduced to different aspects of neurobiology, including but not limited to neuroanatomy, neurodevelopment, neurophysiology, neuroimaging and neurological diseases. Course Prerequisite: This course is designed for students with a basic knowledge of human anatomy and physiology. Successful completion of Biochemistry (GPSC5410) and Principles of Drug action (GPSC5504) is mandatory.

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**GPSC 5301 Topics in Pharmaceutical Sciences (3:3:0,F)** (3:3:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

**GPSC 5303 Topics in Pharmaceutical Sciences (3:3:0,F)** (3:3:0). Special topics in pharmaceutical sciences that are not normally included in other classes. May be repeated for credit with change in content.

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**GPSC 5307 Pharmaceutical Sciences Research Methods (3:0:3,F)** (3:3:3). A lecture and laboratory course designed to provide an overview of current research methods in pharmaceutical sciences under direct guidance of a faculty member.

**GPSC 5310 Drug Design and Discovery (3:3:0,F)** (3:3:0). Prerequisite: GPSC 5504. Overview of new methods for quantitative SAR, computer-aided drug design, mass screening, and combinatorial chemistry.

**GPSC 5311 Drug Development and Discovery (3:3:0,F)** The steps and processes involved in drug development and discovery. Course Prerequisite: N/A

**GPSC 5320 Drug Metabolism (3:3:0,F)** (3:3:0). Analysis of primary metabolic enzymatic systems involved in the clearance of drugs from the body and the mechanisms that regulate their activity.

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**GPSC 5362 Pharmaceutical Regulatory Affairs (3:3:0,F)** Basic regulatory and Quality Assurance concepts. Course Prerequisite: N/A

**GPSC 5370 Biotechnology (3:3:0,F)** (3:3:0). An introduction to the area of molecular biology, genomics, and protein chemistry.

**GPSC 5375 Immunology (3:3:0,F)** The structural components of the human immune system; the cellular and molecular basis of immunological function; diagnostic tests using immunological reagents; mechanisms of resistance against microbial and neoplastic diseases; transplantation immunology; pathology of immune-mediated diseases; prevention of disease by vaccines; pharmacotherapeutic intervention in immunological processes; contemporary topics in immunology.

**GPSC 5410 General Biochemistry (4:4:0,F)** Chemical and molecular aspects of biological processes, including the chemistry of biomolecules, enzymology, bioenergy, biochemical control mechanisms, and molecular biology. Discussion of metabolic diseases and fundamentals of human nutrition.

**GPSC 5411 Graduate Pharmaceutics (4:4:0,F)** Covers the physical chemical principles for the development of safe and effective pharmaceutical dosage forms, fabrication of conventional liquid, solid and aerosolized dosage forms, fundamental of various drug delivery systems, and the process of drug development, discovery and commercialization. Course prerequisite: Admission to the Graduate Program of Pharmaceutical Sciences.

**GPSC 5429 Pharmacokinetics (4:4:0,F)** Introduces the basic principles of pharmacokinetics, including compartmental and physiological analysis of the time courses of drug absorption, distribution, and elimination, with an emphasis on the pharmacokinetic-based dosage-regimen design. Course prerequisite: Admission to the Graduate Program of Pharmaceutical Sciences.

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**GPSC 5455 Graduate Pharmaceutics (4:4:0,F)** Physicochemical principles for the design and development of pharmaceutical dosage forms. Advanced instruction in solution, suspension, and semisolid dosage forms.

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**GPSC 6000 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 6002 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 6003 Master's Thesis (1-6:0:1-6,F)** Master's Thesis

**GPSC 7000 Pharmaceutical Sciences Research (1-12:0:1,F)** Pharmaceutical Sciences Research

**GPSC 7002 Pharmaceutical Sciences Research (1-12:0:1-12,F)** Pharmaceutical Sciences Research

**GPSC 7003 Pharm Sciences Research (1-12:0:1-12,F)** Pharmaceutical Sciences Research

**GPSC 7101 Pharmaceutical Sciences Seminar (1:0:1,F)** (1:1:0). Weekly seminar series designed to provide training in research data presentation and analysis.

**GPSC 7103 Pharmaceutical Sciences Seminar (1:0:1,F) (1:1:0).** Weekly seminar series designed to provide training in research data presentation and analysis.

**GPSC 8000 Doctoral Dissertation (1-12:0:1-12,F)**

**GPSC 8002 Doctoral Dissertation (1-12:0:1-12,F)** Doctoral Dissertation

**GPSC 8003 Doctoral Dissertation (1-12:0:1-12,F)** Doctoral Dissertation

# Graduate School of Biomedical Sciences Faculty

Faculty Directory

# Course File Maintenance

Purpose: To outline information that should be maintained for each course taught within the GSBS.

A completed course file is kept for each graduate course offered in the Graduate School of Biomedical Sciences.

Programs/concentrations utilizing GSBS 5098 and GSBS 5099 courses for their students are responsible for course file maintenance.

The course file includes the following:

1. Course syllabus utilizing the GSBS Template available **online**. This syllabus must be submitted to the GSBS office two weeks prior to the first day of each semester. Every course syllabus should clearly differentiate the number of lecture hours vs. semester credit hours earned for the course. Only minimal changes to the syllabus submitted to the GSBS are allowed (\*\*see note below)
2. Required assignments/notes
3. A copy of each test administered
4. One sample item for each course activity. Student names are to be removed from each sample and faculty are encouraged to ask the student for permission to place the item in the course file
5. Copy of the course evaluation
6. Roster of all faculty teaching in the course
7. Number of students enrolled and grade distribution

GSBS Lubbock courses are maintained electronically and house in Sakai.

Course directors may use the following as a guideline for gathering the information:

- Two months after the first day of class, submit the faculty roster and copies of all course materials (required assignments, lecture notes, syllabus, etc.)
- After each exam, submit a copy of the test that was administered
- At the end of the course, the course director should submit:
  - a. sample items for each course activity (such as papers, projects, exams, etc.)
  - b. number of students enrolled and the grade distribution
  - c. copies of the course evaluations

Course files should be kept for ten years to align with Texas Higher Education Coordinating Board program review schedule and reporting. After 10 years, the course materials will be house with the program review files.

\*\*Regents' Rule 10.03 Ownership.

10.03.1 Except as specifically provided in research agreement sponsored by third parties, and as provided in Section 10.03.3, intellectual property created by covered persons with the use of TTUS resources or during the course of covered persons' TTUS responsibilities is automatically owned by TTUS. All covered persons must, and do hereby, assign their rights in such intellectual property to TTUS. Intellectual property that is developed on a covered persons' own time without TTUS support or use of TTUS resources is not owned by TTUS. Ownership of intellectual property developed under a sponsored research agreement or other funding arrangement shall be determined in accordance with the terms of the sponsored research agreement or other agreement, or, in the absence of such terms, is owned by TTUS.

## Core Curriculum Coordination (CCC) Committee

The duties of the CCC Committee are to provide leadership and organization of the courses and other educational experiences required of first-year, first-semester GSBS students in the Biomedical Sciences program. This committee is composed of the course directors from the GSBS first-semester core curriculum in the Biomedical Sciences. Two graduate student members and an additional faculty member not involved in administration of a first-semester core course are also members. Both Course Directors and additional members are appointed each year by the GSBS Dean with advice from GSBS Graduate Council. The Chair and Vice-Chair of the committee is elected by its voting members. The Chair will serve a two-year term ending on July 31st. After which time, the Vice-Chair will become Chair for two years, and another Vice-Chair will be elected (implemented Fall 2019). The new Chair will hold elections for the Vice-Chair in August every two years. The GSBS Sr. Associate Dean responsible for curriculum is an ex officio member. The CCC Committee will meet as needed. Clerical support for meetings will be provided by the GSBS Office Staff.

More specifically, the CCC Committee will do the following:

- Promote excellence in the biomedical sciences by developing rigorous, relevant curricula that provide the fundamentals needed by all graduates of the Biomedical Sciences program.
- Organize the scheduling of classes, exams, and alternative teaching formats to ensure orderly progression of the educational

experience.

- Establish mechanisms to recruit and mentor new course directors and ensure an equitable distribution of teaching responsibilities among the various departments and concentrations.
- Work with the individual concentrations to provide and organize laboratory rotations for first-year, first-semester GSBS students.
- Report annually to the GSBS Dean and Graduate Council on the status of the core curriculum and student performance. Provide advice to the GSBS Dean and Graduate Council, as needed, on general education issues. This committee charge will be reviewed and revised as needed yearly by the GSBS Dean with advice from CCC Committee members and Graduate Council.

This committee charge will be reviewed and revised as needed yearly by the GSBS Dean with advice from CCC Committee members and Graduate Council. Subsequent charge reviews and revisions will occur as needed.

## Course Evaluation and Review

**Purpose:** To secure regular and systematic information regarding student satisfaction of courses to improve overall instructional performance. In order to increase subsequent program/concentration effectiveness and to assess participant satisfaction with each particular course, on-line evaluations will be solicited from all students at the end of each semester. The main goals of the evaluations are to provide information to instructors about how effectively their teaching is for student learning and to help them improve their teaching.

**Course Evaluations:** Evaluations are conducted around the last two weeks prior to the exam week of each academic term. The GSBS office sends e-mails (including the direct link to the online survey) to students requesting that they participate in the evaluations. Evaluations are conducted in such a way as to encourage a high rate of return and thoughtful responses from students. Evaluation results and comments are available to the instructor with no identifying information; therefore, all evaluations are completely anonymous and confidential. The GSBS office utilizes a software program to record who has submitted an evaluation so reminder email can be sent to non-respondents. Note: Independent studies, thesis, dissertation, and research courses are not evaluated. Courses with enrollment of less than four in a semester are not released independently. The results of those evaluations are merged with the next year's results for that course and are released when there is a class cohort of more than 4 for that course.

**Course Reviews:** Once course evaluations have been collected by the GSBS office, they are e-mailed to the course directors. The course directors have 2 weeks to have a wrap-up meeting with all instructors of the course and provide a summary (to the GSBS office) which includes 1) Changes to the course from the prior year, 2) Addressing student complaints, 3) evaluate how the course compared to last year's student evaluation, and 4) provide ideas or recommendations proposed for next year to improve the course.

The curriculum committee reviews student evaluations and the course director summaries at the end of the Spring and Fall semesters.

**Curriculum committee:** The curriculum committee consists of one GSBS faculty from the Biotechnology & Pharmaceutical Sciences programs and one faculty from each concentration with the Biomedical Sciences Program as well as 2 students. The positions are appointed by the GSBS Dean and serve 3-year terms. This committee makes recommendations to the course director if there are serious issues mentioned in the evaluations. The committee also compares prior year evaluations to verify that issues have been addressed.

**Distribution of results:** Results shall be reported according to the following guidelines:

- Department Chairs, graduate advisors and course directors will receive only the evaluation summaries for the courses they oversee.
- Faculty providing instruction in a course will receive their individual faculty evaluation along with the overall course summary.
- Academic coordinators will receive confidential copies to file 1) in the course file (required by SACSCOC) and 2) in individual faculty files (for promotion and review)

**Use of evaluations:** The curriculum committee systematically reviews evaluation results to assess program/concentration effectiveness and inform, as appropriate, graduate advisors and instructors of evaluation results and take steps to correct any deficiencies. Ongoing course evaluation helps identify potential areas for improvement, determines training effectiveness, and helps shape future curriculum and course updates.

## Graduate Academic Review

Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences (GSBS) contains the following Graduate

Programs: Biomedical Sciences, Biotechnology, Graduate Medical Education Sciences, and Pharmaceutical Sciences. The Biomedical Sciences program consists of 4 concentrations: Biochemistry, Cellular and Molecular Biology, Immunology and Infectious Diseases, Molecular Biophysics, and Translational Neuroscience and Pharmacology. References within this document to "program", refer to Biotechnology, Biomedical Sciences, Graduate Medical Education Sciences, and Pharmaceutical Sciences.

### **Purpose:**

The main objective of ongoing, continuous assessment is to provide a mechanism for improving the quality of graduate program/concentrations at Texas Tech University Health Sciences Center Graduate School of Biomedical Sciences (GSBS).

Graduate Academic reviews consist of two interrelated activities. The first is a formal review, which occurs every 10 years. The second is continuous, ongoing assessment of key program/concentration outcomes, as identified by the graduate faculty of each academic area. Collection and analysis of data related to these outcomes, as well as resulting changes, are reported to the GSBS Office annually. At the time of the next formal review, summaries of these reports will be included in the self-study. The formal review process comprises five major components: (1) a self-study prepared by the graduate faculty, (2) an external review committee (ERC), (3) an internal review committee (IRC) evaluative report and recommendations, and (4) program and concentration faculty's response to that report, containing an action plan. The action plan is developed from a post-review meeting of the graduate advisors, Department Chairs and the GSBS Associate Dean. Annually, through the use of Weave Online, the program/concentration reports to the GSBS on progress toward implementing the action plan formulated from the 10-year review. The action plan along with a summary of the self-study and external reviews will be submitted to the TTUHSC THECB Liaison who will forward to the THECB Academic Affairs and Resource Division no later than 90 days after the conclusion of the review.

Complementing the formal review is a continuous, ongoing outcomes assessment. Outcomes assessment focuses primarily on student learning. It asks and answers the questions:

1. What do we want our students to know and be able to do when they graduate?
2. How well does our program/concentration promote that learning?

Its purpose is to monitor whether a program/concentration is achieving its goals so that where goals are not being met, changes and improvements can be made. This process begins when graduate faculty identify the major objectives of their program/concentration, the more specific outcomes derived from these objectives, and the data that must be collected and analyzed to determine whether those outcomes are being achieved. To the extent possible, the data are supplied by the GSBS and other university sources. However, some data- e.g., data aggregated about student performance on prelims, the final oral defense, etc. – must be collected within each academic area.

Once outcomes and relevant data sources have been identified, the next step is to develop an outcomes assessment plan. The plan should identify which outcomes will be assessed over the ten-year cycle between formal reviews. Annually, the graduate advisor or another faculty member designated by the department Chair reports to the GSBS, within Weave, as to which outcomes were assessed, what the findings were, and any resulting improvements. A summary of these reports, as well as the assessment plan, becomes part of the self-study for the next formal review.

### **Annual Report on Action Plans**

Each program will be reviewed on a ten-year interval. Every year between formal reviews, each graduate advisor or designee of the programs, or concentrations, will be asked to provide a brief summary of progress made on the "action items" listed: What, if any, items are behind schedule, and what are the hindrances to their timely completion? What strategies have been developed to address these hindrances (e.g., modifying the action item, seeking other resources to fund the action item, etc.)? Is there anything the GSBS office or TTUHSC administration can do to help address any uncompleted action items? This information will be captured in the Weave Online system.

Periodic graduate academic reviews give the school important information about the strengths and weaknesses of academic areas such as: the quality and accomplishments of its graduate students, the future resource needs, and its contribution to the mission of the university. These reviews are designed to help faculty and administrators gain a clear understanding of the following:

1. The academic purpose within TTUHSC and GSBS.
2. Objectives and outcomes (faculty expectations) for the program/concentration. The effectiveness in achieving these purposes & outcomes.
3. The overall quality.
4. The faculty's vision, i.e., future aims and changes necessary to achieve those aims.

Schedule of GSBS Academic Reviews (all dates tentative)	
Biotechnology	2024-2025
Pharmaceutical Sciences	2026-2027
Graduate Medical Education Sciences	2029-2030
Biomedical Sciences	2032-2033

**Sections included in this policy**

Review Process Timeline

Review Format Task of the Internal and External Reviewers Guidelines for Internal and External Reviewers

Attachment A: Suggested Faculty Activity Report Template

Attachment B: Graduate Academic Review Assessment Form

Formal Review Process Timeline	
Jul	<p>Notification of Review: The GSBS Office will schedule a meeting with all Graduate Advisors and Department Chair(s) of the program to be reviewed to discuss the guidelines of the review process. If the Biomedical Sciences program is reviewed the Graduate Advisors and Department Chair(s) of the concentrations will be included.</p>
Aug	<p>The Department Chairs will submit to the GSBS office the names of the Data Subcommittee faculty along with the names and contact information for possible external reviewers. The GSBS Office will be responsible for contacting the external reviewers and securing their cooperation.</p> <p>Preparation of the Review Document: The self-study document should follow the format shown in the next section. The Department Chair(s) may designate a team of faculty members, considered the Data Subcommittee, to prepare the Graduate Academic Review Document. This subcommittee should have a Chair appointed by the Department Chair(s). However, the Department Chair(s) should be actively involved in overseeing its preparation and is responsible for the content, accuracy, and completeness of the report. All current graduate faculty members of the program/concentration being reviewed should be involved in the preparation of the report. The participation of enrolled students, alumni and professional staff is highly encouraged. The report should be evaluative rather than simply descriptive. It should incorporate not only an analysis of incoming students, time to degree, attrition rates, etc. but also a summary of the program and each concentration's continuous and ongoing outcomes assessment and the faculty's vision for the future. To ensure that the GSBS meets FERPA regulations, please ensure that all student information does not include private information such as SSNs.</p> <p>Selection of GSBS Internal Review Committee Members: Departmental Chairs will select two graduate faculty members from each program/concentration to serve as representatives on the GSBS Internal Review Committee. In addition, the GSBS Office will select 2 student representatives.</p>
Nov	<p>Submission of Program/Concentration Review Document: The GSBS Office will review the document and may request that revisions be made if it is incomplete or simply descriptive. The report should address the appropriateness of the academic goals, the quality of the students, and those elements influencing student success: mentoring, research, the faculty, the curriculum, professional development opportunities, facilities, and student funding. The report should also summarize the strengths and weaknesses of the program and concentrations and make recommendations for improvements. The GSBS office will send copies to the GSBS review committee and the external reviewers. The original document will remain in the GSBS Office (UC 115).</p>



Nov	External Reviews: Each program will be reviewed by at least 2 external reviewers (ERC) outside of Texas who will be provided the self-study for each concentration/program and will be brought to the campus for an on-site review in January. The external committee will consist of 5-6 reviewers for the Biomedical Sciences review and 2 external reviewers for Biotechnology, GMES, MPH, and Pharmaceutical Sciences.
Nov	The Review Process: The GSBS Senior Associate Dean will meet with the Internal Review Committee (IRC) members within the first two weeks of November. At this meeting instructions and advice on the review process, including an optional review template (Attachment B) will be given and the committee will be asked to select a Chair from its membership.  The Program Review Document will be mailed to External Reviewers no later than Nov 15.
Jan	External Reviewers Site Visit: A site visit by External Reviewers should be scheduled sometime around the first week of GSBS classes, but no later than Jan 31. External review documents due to GSBS by February 15.
Feb	Internal and External Report Due: Copies of the external review report are provided to the Internal Review Committee Chair.  External Review sent to IRC for comments.
Mar	Documentation Distributed: Copies of the IRC report and the external reports will be provided to the Graduate Advisor(s), Department Chair(s) and Data Subcommittee Chair(s), with a request for a written response from the program/concentration faculty. The response (Action Plan) outlines the means and timetable by which the faculty plans to implement the recommendations of the GSBS review committee and specifies any additional resources needed to do so.
May	Action Plan sent to GSBS
May	Post-review Meeting: The GSBS Senior Associate Dean will schedule a meeting with the Graduate Advisor(s), the Department Chair(s), Data Subcommittee Chair(s) (if applicable), the Chair of the GSBS review committee, and the GSBS Dean, for mid-May. At this meeting, the graduate advisor(s) and Department Chair(s) summarize the faculty's response (Action Plan). For the Biomedical Sciences review, the GSBS Associate Dean will provide a summary of the recruitment efforts, admissions process, and the Integrated First Year Core Curriculum.
Jun	Executive Summary Due
Note	During the review process for the Biomedical Sciences program, the GSBS office will include a summary of the recruitment efforts, admissions process and the Integrated First Year Core Curriculum. In addition, the GSBS office will merge all data provided by each concentration to summarize the Biomedical Sciences program. The final report will include aggregate data no concentration specific data.

### THECB Criteria for Review

- The 18 Characteristics of Texas Doctoral Programs;
- Student retention rates;
- Student enrollment;
- Graduate licensure rates (if applicable);
- Alignment of program with stated program and institutional goals and purposes;
- Program curriculum and duration in comparison to peer programs;

- Program facilities and equipment;
- Program finance and resources;
- Program administration; and
- Faculty qualifications

### Review Format

All data should be collected for the prior ten academic years

### Program/Concentration Overview

1.1	Title of Program/Concentration
1.2	Department Name
1.3	Brief History and Mission: Provide a brief history of the development of the graduate program/concentration. Briefly describe the mission.
1.4	Degree Objectives and Outcomes: List the objectives and outcomes (faculty expectations) for the program/concentration.

### Graduate Curriculum

2.1	Course offerings and their enrollment during the review period (Summary and table).
2.2	Describe any significant changes in curriculum and instruction since the last review. Explain the reason for the changes, such as different needs of students, shifts or emphasis in the discipline, changes in faculty, perceived weakness in the curricula, problem with facilities, etc.
2.3	List required courses: First-year curriculum, statistics, ethics, etc.
2.4	What specifically is done to facilitate critical thinking and problem solving to prepare graduates for a wide variety of positions in academics and other environments?

### Faculty

3.1	Alphabetical by list, by rank (graduate faculty membership), of graduate faculty members in the program/concentration including a statement of how many new faculty members have been hired since last review.
3.2	Report on Faculty Activity for the past 7 years:
3.2.1	Education - See Appendix
3.2.2	Teaching - list all graduate program's courses taught; number of hours lectured per year in those courses; student enrollment in courses taught.
3.2.3	Committee responsibilities
3.2.3.1	Number of advisory committees that each members has served or chaired during the past 7 years, including the students name and when student graduated

	3.2.3.2	Service to GSBS committees; graduate council, Chair of recruitment committee, core curriculum committee, etc.
	3.2.4	Honors and Awards
	3.2.5	Major Publications - Number of scholarly publications during the period of review (excluding abstracts)
	3.2.6	Funded projects/Grants - Active external and internal grants and contracts
	3.2.7	Service - should include any program/concentration, university, professional and community service activities (grant review panels, editorial boards, leadership positions in professional societies)
3.3		Advising: Describe how and when faculty advisors are assigned to graduate students, as well as any guidance that new faculty are given in direction graduate student research.
3.4		Faculty Quality: Describe the ways in which the department evaluates the quality of its graduate faculty (e.g., teaching evaluations, peer review, publications, research grants, graduate students advised and their time to degree) and how it uses the results of these evaluations.
3.5		Faculty Distribution: Is the department staffed adequately to meet the needs of various fields of specialization in your discipline? If not, please provide a realistic plan for how an appropriate distribution of faculty could be achieved across specializations offered.

### Graduate Students

4.1		Data Collection - admission criteria
	4.1.1	Number of applications for last 7 years
	4.1.2	Percent of applicants offered that actually matriculated
	4.1.3	List of where students came from (previous schools)
4.2		Data Collection - student information
	4.2.1	Students graduated during the review period, graduate GPA's and attrition rates
	4.2.2	Average time and credit hours per degree
	4.2.3	Students during the review period that have received national and university recognition, including fellowships, scholarships, departmental and other awards (include name, type and amount of awards received)
	4.2.4	Number and percent of doctoral graduates employed in the field (or in a post- doctoral position) within one year of graduation and the average length of time to secure the job.
	4.2.5	Present position and place of employment of students graduating from the academic area during the review period
	4.2.6	Publications & presentations by student

4.3	Quality: Comment on how you evaluate and assess the quality and performance of your graduate students. Referring to the above data, comment on student quality and trends over the past 7 years. What specific measures does the department use to evaluate the quality of entering students? (For example, what use is made of the GPA or of standardized test scores such as the GRE?). Are your students as good as you would like them to be? If not, what are the contributing factors? What are the specific admissions criteria for masters and doctoral students? Provide summary of recruitment efforts.
4.4	Degrees Granted: Comment on the trends in the number of degrees awarded annually and the average length of time required to complete each degree. What is currently the approximate attrition rate? What has been the trend in attrition over the past 7 years? If attrition has been increasing, what measures, if any, have been taken to address that increase?
4.5	Need/Placement: Describe past, present and anticipated future need for graduates in the TTUHSC community, region and nation. Report any information you have on the level of employer satisfaction with your graduates and the students post graduate performance (if available). Describe the level and kinds of assistance you offer in the placement of your graduates. Assess the strength of student demand for your program/concentration over the last 7 years.
4.6	Funding: Describe the research assistantships and other support packages available for your students and the approximate annual number of assistantships awarded.

#### Current Research

5.1	Current Research: Provide a brief description of significant ongoing research in your program/concentration, including the number of post-docs in the labs. Indicate the major strengths or emphases of this research. Describe three to five major research accomplishments over the past 7 years by faculty and/or graduate students and any new research emphases planned for the near future (through new faculty hires, redirection of current faculty's research, etc.)
5.2	External Research Support: Evaluate the level of external funding for research. Are graduate faculty competing effectively for external support? What were the levels of outside funding in research grants and other grants (a) at the time of the last review, and (b) the current year? Comment on any trends.
5.3	Research Development: What is being done to encourage and develop research collaborations with faculty performing similar research elsewhere in the university? Also, please describe deficiencies in facilities and resources that impede the attempts to reach research objectives and any plans to address deficiencies.

#### Conclusion - (maximum two-page summary)

6.1	Summarize the major strengths and weaknesses of the graduate program/concentration and the challenges and opportunities it faces in the foreseeable future. Include summary information (highlights and challenges) captured in WEAVE online annual reports.
6.2	Briefly describe the vision/strategic plan for the immediate future: Project the major goals for the next 7 years.

#### Appendices - could include, but not limited to, the following

7.1	Strategic plan to improve/maintain the program/concentration
7.2	Specific graduate program/concentration guidelines
7.3	Weave online reports for 7 years

## Task of the Internal and External Reviewers

**Assessment:** The task of the reviewers is to formulate objective judgments of the quality and effectiveness of the academic area. This evaluation is concerned mainly with the quality of graduate education received by students.

**Sources:** The GSBS review committee is encouraged to focus attention on questions regarding the relationship of program/concentrations to the goals of the university. It is the task of the reviewers to single out those features that merit special commendation, and to make recommendations where there is room for improvement. Reviewers should formulate their evaluations not only from the review document, but also from interviews with the graduate advisor, his/her departmental Chair, other graduate faculty members, and the students.

**The Executive Summary Report:** The findings and recommendations of the GSBS review committee should take the format of a concise one to two-page executive summary. Overall observations, reputation, strengths/commendations, weaknesses/recommendations, and value of the program/concentration to the mission of the university should be included in this report. Specific and prioritized recommendations should be made regarding what is needed to strengthen areas that have weaknesses, or perhaps what is needed to further strengthen an excellent program/concentration. The GSBS review committee should rate the program/concentration under review and provide an overall assessment similar to the following:

- Excellent
- Satisfactory
- Needs improvement

## Guidelines for Internal & External Reviewers

During the review of a graduate academic area, reviewers are encouraged to evaluate with respect to the areas shown below. Reviewers should approach this evaluation with the same seriousness and thoroughness as if they were performing peer review of a manuscript or extramural grant application. Reviewers are encouraged to give a numeric rating for each area and the optional review template may be useful in this area. Reviewers should not feel confined to the areas specified and can examine and comment on other areas that they deem important to the review process. The primary goal of the review is to provide the university, graduate school, and graduate program/concentration under review with a meaningful and critical assessment of the academic area.

**Overview and Vision.** Reviewers should examine the mission and vision of the graduate program/concentration, paying special attention to academic planning, organization, size, and success at achieving the stated mission.

**Faculty Productivity.** Factors that should be considered include: faculty resources, particularly external research funding; faculty publication records, scholarship, and awards; faculty external recognition.

**Quality and Quantity of Graduate Students and Graduates.** Factors that should be considered include: student recruitment, student retention, applicant pool, placement of graduates, career success of former students, and student productivity.

**Curriculum.** Factors that should be considered are: degree requirements, course offerings and frequency, areas of specialization, nature and type of qualifying exams.

**Recommendations & Suggestions.** Provide recommendations and suggestions for improvement.

**External Review Reports.** External Reviewers may use whatever format they prefer to submit their review to the Graduate School of Biomedical Sciences. If you do not have a preferred method, we will provide you with a template that may be utilized.

## Suggested Faculty Activity Report Template

### General Guidelines/Instructions

Each Faculty Member Report Document submission:

- Should be limited to no more than a total of five pages
- Should provide a concise, balanced, and brief document that summarized the past 10 years of relevant activities

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**Name**  
**Faculty Activity Report**  
**Last 10 Academic Years**  
**(e.g., September 2009**  
**to August 2019)**

---

**Education**

- List degrees earned, major, and each year degree was attained.

**Teaching** (last 10 years only)

- List all GSBS courses taught during the review period.
- Provide semester and year that course was taught.

*Example:*

2010-2011	Fall/Spring		Enrollment
		GPHY 230 Introduction to Statistics	_____
		GPHY 290 Research Methods	_____
		GPHY 320 Learning and Motivation	_____

Please provide any Chair and committee responsibilities, along with all individual instruction/mentoring activities that you provide in this section.

- On doctoral dissertations, please specific student name, degree, dissertation title, and date of completion
- On master's thesis, please specify number chaired and number of memberships.

**Honors and Awards** (last 10 years only)

- List awards and honors received along with the year that it was bestowed.

**Major Publications/Scholarly Work** (last 10 years only)**Funded Projects/Grants** (last 10 years only)**Service** (last 10 years only)

- List service activities and years provided.
- Should include any unit, college, university, professional, and community service activities.

Note: Full faculty CVs should also be made available to the external reviewers.

## Graduate Academic Review Assessment Form

**INSTRUCTIONS TO REVIEW PANEL MEMBERS**

The Texas Higher Education Coordinating Board (THECB) has nine criteria for evaluation. This review will be submitted to the program director, Dean of the Graduate School of Biomedical Sciences and be part of the review document submitted to THECB.

Reviewers will provide a numeric assessment using a 5 point scale: 1 excellent, 2 good, 3 average, 4 mediocre and 5 poor.

**Executive Summary**

**Summary:** Write a summary of the overall program review. The summary score is not necessarily an average of the component scores but your assessment the program in preparing future biomedical scientists

**Summary Score:**

The review has been divided into four sections: mission and vision, students, faculty and curriculum. Reviewers are requested to make comments, including both strengths and weaknesses, on expectations, achievements, etc. as appropriate.

**1. Mission and vision:**

**Score:**

**Academic planning**

- 

**Administration and Organization**

- 

**Success at achieving state mission**

**Comments**

- 

**2. Students: Quality and number of students in program**

**Score:**

**Admissions criteria**

- 

**Recruitment and applicant pool**

- 

**Student diversity (applicant pool, matriculated, graduated)**

- 

**Financial support, amount and sources**

- 

**Student enrollment**

- 

**Graduation rate and number of degrees per year**

- 

**Placement of students and career success**

- 

**Student productivity**

- 

**Student organized activities, e.g. Student Research Week**

- 

**External student awards**

- 

**3. Faculty**

**Score:**

**Number of core faculty**

- 

**Faculty diversity (core)**

- 

**Core faculty publications**

- 

**Core faculty external grants**

- 

**Core faculty awards, recognition, and external professional service**

- 

**4. Curriculum**

**Score**

**Degree requirements**

- 

**Comments**

- 

**5. Program curriculum and duration in comparison to peer programs**

**Score**

**Comments**

- 

**6. Program facilities and equipment**

**Score**



<b>Comments</b>
•
<b>7. Program finance and resources</b>
<b>Score</b>
<b>Comments</b>
•
<b>8. Program administration</b>
<b>Score</b>
<b>Comments</b>
•
<b>9. Faculty qualifications</b>
<b>Score</b>
<b>Comments</b>
•
<b>Any other comments pertinent to program assessment not covered above</b>
<b>Comments</b>
•

## Inclement Weather/Campus Closures and Course Delivery Policy

### Purpose and Scope:

The purpose of this TTUHSC Graduate School of Biomedical Sciences (GSBS) inclement weather course delivery policy is to describe the process for making course materials accessible to students in the event of class cancellation due to weather delays and other campus closures. It applies to all courses designated for synchronous broadcast from an instructor located at the originating campus to a classroom of students at a delivery campus.

### Policy

The GSBS is expected to comply with the SACSCOC Principles of Good Practice for Academic Degrees and Certificate Programs and Credit Courses Offered Electronically, and the THECB standards found in the Certification Form for Electronically Delivered and Off-Campus Education Programs, to ensure that courses offered electronically are coherent and complete, and student learning is comparable to that of students learning in programs offered at the campus where the courses originate. It is the policy of the GSBS to record all lectures given via synchronous broadcast to students at a delivery campus and to post the recordings on Sakai. Students are expected to meet all attendance requirements of the course as addressed in the course syllabus. Faculty who wish to opt-out of posting of their recorded lectures may do so, except in the event of weather delays or campus closures, no later than 2 weeks prior to the first day of each semester. Electronically delivered courses will be recorded and made available to students in the event of a campus closure or weather delay according to the following procedure:

### Procedure

1. Regional campus closures will be communicated from the TTUHSC Campus-wide Information delivery system (via TTUHSC email, or posted on the **Announcements page**). Students and teams are advised to sign up to TTUHSC STAT ALERT for their regional campus.
2. GSBS Regional Deans will designate a point of contact for communicating impact of campus closures on classes scheduled for the duration of the weather delay.
3. The Program Coordinator at the originating campus shall communicate all class cancellations, and plans to reschedule, directly to all students in the course and the Program Coordinator at the delivery campus. The Program Coordinator at the originating campus will email class participants and the Course Director via TTUHSC email.
4. All class cancellations at the delivery campus shall be communicated directly to the Program Coordinator at the originating campus.

5. Recorded lectures will be posted to Sakai by the Program Coordinator at the originating campus within 48 hours after the lecture and will be removed at the end of the semester.
6. In the case of excused absences due to unforeseen circumstances, students may request lecture recordings from the Course Director. Recorded lectures will be provided to such students via Sakai only when the instructor has not opted out of the lecture posting process.

## Concentrations and Programs (New, Terminating & Changing Delivery Format)

Purpose: To outline the procedure for initiating and developing new concentrations and degree programs, for changing delivery format for degree programs, and for terminating existing degree programs. The process listed in this policy and steps 1 – 4 of the **GSBS New/Restructured Program Checklist** should be followed prior to conforming to HSC OP 60.11 (part e, below).

1. Proposing a New Concentration within an Existing Program
  - Although a proposal for a new graduate concentration typically originates at the departmental level, development of the proposal should be preceded by conferences with the GSBS Dean and representatives from each participating department. The Dean will encourage or discourage continued development of the proposal on the basis of university and GSBS priorities.
  - Once development of a new concentration receives the support of the Dean, a modified new program proposal document will be prepared in accordance with the guidelines of the Texas Higher Education Coordinating Board (THECB). Highest priorities for consideration of new concentrations shall be given to:
    - Adequacy of faculty and facilities to undertake the program;
    - Cost and relative impact on existing programs;
    - Need for the program and benefits that will accrue to Texas from approval and implementation of the proposed program;
    - Numbers and kinds of students who likely will enter the program;
    - Market relevance for the academic degree, availability of existing or similar program in the state and region;
    - Long-term market and educational sustainability;
    - Degree of fit with TTUHSC mission; and
    - Allocation of resources within the state and university in consideration of priorities.
  - The proposal first should have the review and approval of the department(s) and then be forwarded to the GSBS Office. The GSBS Office will send the proposal to the Graduate Council for review and approval at the next monthly Graduate Council meeting.
  - A proposal for a new graduate concentration is reviewed by members of the Graduate Council. The graduate council may recommend approval, or it may send the proposal back for revisions and/or clarification before making a recommendation to the GSBS Dean. Proposals approved at the Graduate Council level are forwarded to the GSBS Dean for review and approval.
  - If approved by the GSBS Dean, the proposal and **attachment A** will be routed through all university levels via **attachment B** (as per OP 60.11), through the Office of the Provost. At any one of the review stages, a proposal may be rejected or sent back to the originating department for revision and/or additional information.
  - The Office of the Provost will notify the THECB of the change to the existing program inventory as per THECB guidelines and procedures. Programs may not begin accepting students into the new concentration until the GSBS receives acknowledgement from the THECB of the administrative change.
2. Proposing New Programs
  - Although a proposal for a new graduate degree program typically originates at the departmental level, development of the proposal should be preceded by conferences with the GSBS Dean and TTUHSC President, who will encourage or discourage continued development of the proposal on the basis of university priorities.
  - Once a department receives encouragement or approval to develop a new degree program, it will prepare the Texas Higher Education Coordinating Board (THECB) new program proposal in accordance with the guidelines of the THECB, which is available from the **THECB Web site**. If the proposal includes delivery of all or part of the program through distance learning, the Southern Association of Colleges and Schools (SACS) Substantive Change Procedures, available on the **SACS-COC Web site**, will be consulted and followed. Highest priorities for consideration of new programs shall be given to:
    - Adequacy of faculty and facilities to undertake the program;
    - Cost and relative impact on existing programs;
    - Need for the program and benefits that will accrue to Texas from approval and implementation of the proposed program;
    - Numbers and kinds of students who likely will enter the program;
    - Market relevance for the academic degree, availability of existing or similar program in the state and region;
    - Long-term market and educational sustainability;

- Degree of fit with TTUHSC mission; and
  - Allocation of resources within the state and university in consideration of priorities.
  - The proposal first should have the review and approval of the department and then be forwarded to the GSBS Office. The GSBS Office will send the proposal to the Graduate Council for review and approval at the next monthly Graduate Council meeting.
  - A proposal for a new graduate degree program is reviewed by members of the Graduate Council. The graduate council may recommend approval, or it may send the proposal back for revisions and/or clarification before making a recommendation to the GSBS Dean. Proposals approved at the Graduate Council level are forwarded to the GSBS Dean for review and approval.
  - If approved by the GSBS Dean, the proposal and **attachment A** will be routed through all university levels via **attachment B** (as per OP 60.11), through the Office of the Provost to the TTUHSC President and on to the Board of Regents. At any one of the review stages, a proposal may be rejected or sent back to the originating department for revision and/or additional information.
  - If the proposal is approved by the Board of Regents, it will be transmitted by the Office of the Provost to the THECB for final review. The staff of the THECB requests a minimum of three months for review prior to Board action although, frequently, a longer timeline is needed.
  - Prior to offering any distance education or off-campus courses or programs for the first time, GSBS must submit an Institutional Plan for Distance Education and Off-Campus Instruction to the THECB for approval.
3. Reviewing Courses for New Programs or Concentrations
- Any new courses proposed as part of new program/concentration proposals will be reviewed as all other new courses are reviewed: with the understanding that final approval is dependent upon THECB acceptance of the new program or concentration, where applicable.
  - Proposed new courses must be submitted using the **Course Approval Form** and forwarded with the program proposal so that both courses and the overall program description may be treated as a package.
  - The GSBS Office will hold the course applications until the Board of Regents and the THECB approve the program. The office will then complete the paperwork and send to the Registrar's Office where the courses will be entered on the THECB inventory.
  - New courses proposed as a part of a new degree program will not be included in catalog copy until the program is approved by the THECB. New courses must be approved by Graduate Council prior to December 31st in order to be added to the course catalog and to be available for the upcoming scholastic year.
4. Changing Method of Delivery of Existing Programs
- Changes in method of delivery of existing programs that result in 50 percent or more of the program being offered via electronic telecommunications require prior approval by the Board of Regents and subsequent notification to the THECB. These changes also require prior SACSCOC notification and approval and the submission of a substantive change prospectus. The Substantive Change Procedures, which may be obtained from the SACSCOC Web site, should be submitted along with the request to change the method of delivery of the existing degree program. The Office of the President will notify SACSCOC six months prior to the anticipated implementation of the modified degree program.
  - The following routing is required to approve changes in method of delivery: Department, GSBS Office, Graduate Council, Office of the Provost, President and Board of Regents.
5. Termination or Merger of Existing Programs
- A program may be terminated, or two or more programs may be merged, for various reasons, but such action will be preceded by full study and consultation by the parties concerned. Persistent under-enrollment, loss of critical faculty, a shift in priorities, or financial exigency are some of the issues that might lead to termination/merging of programs.
  - Before any program is terminated or merged, the rationale for such action will be presented and considered by the program involved and its department Chair and GSBS Dean. When the necessity for action has been established, the Graduate Council will review the proposed change for graduate programs. After such review, the GSBS Dean will render the final decision in consultation with the Provost.
  - The Texas Higher Education Coordinating Board will be notified by the Provost's Office of any program terminations or mergers.

For more institutional information reference HSC OP 60.11 (New Degree Programs, Change in Delivery Format, and Degree Program Termination).

## Recruitment & Retention

Purpose: To describe recruitment and retention strategies for GSBS

### RECRUITMENT STRATEGIES

**GSBS Website:** One purpose of the website is to expose prospective students to the programs available in the Graduate School of Biomedical Sciences. The GSBS website has links to webpages for each program/concentration.

**Online Applications:** Students are able to apply to the Graduate School electronically via the **website**.

**Research Assistantships:** Many GSBS students receive a Research Assistantship which helps them financially and classifies them as employees of TTUHSC. This classification qualifies them for in-state tuition and **health insurance benefits**.

If a student has external support (Fulbright, international government, etc.) the mentor must provide the same salary share to GSBS as every other student. This is intended to ensure these students are admitted and treated equally as all other students. This cost savings to GSBS allows admission of additional students. However, if external support does not match our level of funding (salary) the GSBS/mentor will augment that provided by the external source. This policy does not apply to students who earn a predoctoral fellowship (F30/F31, American Heart Association, etc.) after matriculation. The mentor is not required to provide salary support for students receiving predoctoral fellowships since their salary will be paid from the fellowships and usually these grants provide supply monies.

Note regarding student health insurance: NIH will only allow health insurance to be paid by F30/31 if all other PhD students in the program are provided health insurance. We currently are unable to have NIH F30/31 grants pay for health insurance.

**Competitive Scholarship:** Exempts a student from payment of nonresident tuition over and above resident tuition. Student must be awarded a competitive scholarship of at least \$1,000 for the academic year or summer of their enrollment and be either a nonresident or citizen of a country other than the United States. Student must compete with other students including Texas residents and the award must be made through a duly recognized scholarship committee. Certification is sent from the GSBS office to the Financial Aid Office. A list of **GSBS Scholarships** can be found on the GSBS website.

**Regional and National Recruiting:** GSBS attends various school career fairs and national science conferences to attract a wide range of students.

**Local Recruiting Events:** GSBS offers many on-site events that draw students regionally and nationally.

- Student Research Week. An interdisciplinary forum designed to:
  - stimulate exchange of research information among students
  - highlight exceptional research performed by students in training
  - expose students to the latest research advancements through seminars presented by distinguished biomedical scientists
  - recruit regional students into our graduate degree program
  - award scholarships in various categories of the poster presentations
- School of Pharmacy Research Days. A forum for faculty, graduate students, research interns, postdocs, technicians, and residents to interact and exchange ideas for possible collaborations. It is a mixture of oral presentations from leading scientists that are invited, and poster presentations from faculty, students, postdocs, and residents. This meeting provides an opportunity for graduate students to showcase their research work and provides opportunity for faculty/student interaction.
- Summer Accelerated Biomedical Research (SABR) Internships. Available to students interested in pursuing a career in basic biomedical research. The SABR Internships are intensive, 10 week opportunities for students to perform basic biomedical research while receiving a research assistantship. This summer program is offered in Lubbock, Texas.
- Amarillo Biomedical Research Internships (ABRI). Available to students interested in pursuing a career in biomedical research. ABRI is a 10 week program of intense research organized by the Texas Tech University Health Sciences Center School of Pharmacy in conjunction with the Pharmaceutical Sciences Program through the GSBS. Each student receives a research assistantship during the internship.
- GSBS Open House - Annual Tour and Dinner. Every year GSBS invites top TTU students to an evening of lab tours and dinner with some of our faculty. Students are targeted from undergraduate areas of study that naturally lend to getting a graduate degree in Biomedical Sciences.
- Abilene Symposium - Annually in the Fall.