

# MASTER OF SCIENCE IN BIOMEDICAL SCIENCES

The Biomedical Sciences (BIMS) Graduate Program is an interdepartmental program of study. Focusing on cross-disciplinary education and training in the biomedical sciences and the numerous associated domains of research, the faculty teach and mentor students in fields that have a critical mass of faculty, exceptional productivity, and international recognition. These areas of research strength include:

- Biomedical Genomics and Bioinformatics
- Diagnostics and Therapeutics
- Infection, Immunity and Epidemiology
- Physiology and Developmental Biology

There are two MS options available from which a student may choose: the thesis concentration and the non-thesis concentration. The Master of Science in Biomedical Sciences with a thesis concentration provides an academic and research experience that educates students within the context of cross-disciplinary knowledge and prepares students to excel in a research career in areas as diverse as academia, government, industry, and others. A Master of Science in Biomedical Sciences with a non-thesis concentration has a curriculum designed for students who wish to gain academic preparation beyond the undergraduate degree before entering a professional program of study or employment in human or animal healthcare.

This program is also approved for delivery via asynchronous or synchronous distance education technology.

Additional details, including information about the admissions process, can be found on the Biomedical Sciences (BIMS) Graduate Program webpage (<https://vetmed.tamu.edu/bims-graduate-program/>).

Steps to Fulfill a Masters Program (<http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#stepstofulfillgraduateprogramtext>)

## Program Requirements

### Program Requirements

- Student's Advisory Committee (p. 1)
- Degree Plan (p. 2)
- Credit Requirements (p. 2)
- Transfer of Credit (p. 2)
- Limitations on the Use of Transfer, Extension and Certain Other Courses (p. 2)
- Thesis Option (p. 3)
  - Thesis Proposal (p. 3)
  - Final Examination/Thesis Defense (p. 3)
  - Final Examination Grading (p. 4)
- Non-Thesis Option (p. 4)

## Student's Advisory Committee

### On-Campus Degree Program

The student's advisory committee for the Master of Science degree with a non-thesis option will consist of only the chair selected during the first semester of enrollment. The chair of the advisory committee

must be from a department within the School of Veterinary Medicine and Biomedical Sciences. Only graduate faculty members located on a campus of Texas A&M University may serve as chair of a student's advisory committee.

The student's advisory committee for the Master of Science degree with a thesis option will consist of no fewer than three members of the graduate faculty representative of the student's field(s) of study and research. The chair or the co-chair of the advisory committee must be from a department within the School of Veterinary Medicine and Biomedical Sciences and selected during the admission process. Only graduate faculty members located at a campus of Texas A&M University may serve as chair of the advisory committee for students enrolled in the on-campus degree program. At least one or more of the advisory committee members must have an appointment to a department other than the department of the chair or co-chair.

Graduate faculty members located off campus from any other department may serve as a member or co-chair (but not chair) for students enrolled in the on-campus degree programs when a faculty member from a campus of Texas A&M University is the chair. The chair, in consultation with the student, will select the remainder of the advisory committee. The chair of the committee, who usually has immediate supervision of the student's research and thesis, has the responsibility for calling required meetings of the committee and for calling meetings at any other time considered desirable.

For both thesis and non-thesis options, if the chair of a student's advisory committee voluntarily leaves the university and the student is near completion of the degree and wants the chair to continue to serve in this role, the student is responsible for securing a current member of the University Graduate Faculty, from the student's academic program and located near the Texas A&M University campus site, to serve as the co-chair of the committee. The department head or chair of intercollegiate faculty may request in writing to the associate provost and dean of the Graduate and Professional School that a faculty member who is on an approved leave of absence or has voluntarily separated from the university, be allowed to continue to serve in the role of chair of a student's advisory committee without a co-chair for up to one year. The student should be near completion of the degree. Extensions beyond the one year period can be granted with additional approval of the dean.

If the chair of the student's advisory committee is unavailable for an extended time in any academic period during which the student is involved in activities relating to an internship, thesis or professional paper, and is registered for courses such as 684, 691, 692 or 693, the student may request, in writing, that the department head appoint an alternate advisory committee chair during the interim period.

The duties of the committee include responsibility for the proposed degree plan, the research proposal, the thesis and the final examination. In addition, the committee as a group and as individual members are responsible for advising the student on academic matters, and, in the case of academic deficiency, initiating recommendations to the Graduate and Professional School.

The committee members' approval on the degree plan indicate their willingness to accept the responsibility for guiding and directing the entire academic program of the student and for initiating all academic actions concerning the student. Although individual committee members may be replaced by petition for valid reasons, a committee cannot resign *en masse*.

### Distance Education Degree Program

The student's advisory committee for the Master of Science degree with a thesis option in the distance education degree program must have an approved chair or co-chair from their off campus location. At least one or more of the advisory committee members must have an appointment to a department other than the department of the chair or co-chair. The chair, in consultation with the student, will select the remainder of the advisory committee. The chair of the committee, who usually has immediate supervision of the student's research and thesis, has the responsibility for calling required meetings of the committee and for calling meetings at any other time considered desirable.

All other requirements for the distance thesis option are the same as those detailed above.

The distance modality is not available for non-thesis option students.

## Degree Plan

### On-Campus and Distance Education Degree Programs

The student's advisory committee, in consultation with the student, will develop the proposed degree plan. The degree plan must be completed and filed with the Graduate and Professional School prior to the deadline imposed by the student's college or interdisciplinary degree program, if applicable, and no later than 90 days prior to the date of the final oral examination or thesis defense.

A student should submit the degree plan using the online Document Processing Submission System (<http://ogsdpps.tamu.edu>).

A student submitting a proposed degree plan for a Master of Science degree should designate on the official degree plan the appropriate program option.

Additional coursework may be added to the approved degree plan by petition if it is deemed necessary by the advisory committee to correct deficiencies in the student's academic preparation. No changes can be made to the degree plan once the student's Request for Final Examination or Request for Final Examination Exemption is approved by the Graduate and Professional School.

## Credit Requirement

### On-Campus and Distance Education Degree Programs

The Master of Science non-thesis option requires successful completion of a minimum of 30 semester credit hours of approved coursework.

The Master of Science thesis option requires successful completion of a minimum of 32 semester credit hours of approved coursework and research.

Ordinarily, the student will devote the major portion of their time to work in one or two closely related fields. Other work will be in supporting fields of interest.

## Transfer of Credit

### On-Campus and Distance Education Degree Programs

A student who has earned 12 hours of graduate credit in residence at Texas A&M University may be authorized to transfer courses in excess of the limits prescribed below upon the advice of the advisory committee and with the approval of the Graduate and Professional School. Courses taken in residence at an accredited U.S. institution or

approved international institution with a final grade of B or greater may be considered for transfer credit if, at the time the courses were completed, the courses would be accepted for credit toward a similar degree for a student in degree-seeking status at the host institution. Otherwise, the limitations stated in the following section apply. Coursework in which no formal grades are given or in which grades other than letter grades (A or B) are earned (for example, CR, P, S, U, H, etc.) is not accepted for transfer credit. Courses appearing on the degree plan with grades of D, F or U may not be absolved by transfer work. Credit for thesis research or the equivalent is not transferable. Credit for coursework submitted for transfer from any college or university must be shown in semester credit hours or equated to semester credit hours. An official transcript from the university at which the transfer coursework was taken must be sent directly to the Office of Admissions.

Courses used toward a degree at another institution may not be applied for graduate credit. If the course to be transferred was taken prior to the conferral of a degree at the transfer institution, a letter from the registrar at that institution stating that the course was not applied for credit toward the degree must be submitted to the Graduate and Professional School.

Grades for courses completed at other institutions are not included in computing the GPA.

## Limitations on the Use of Transfer, Extension and Certain Other Courses

### On-Campus and Distance Education Degree Programs

Some departments may have more restrictive requirements for transfer work. If otherwise acceptable, certain courses may be used toward meeting credit hour requirements for the master's degree under the following limitations.

1. The maximum number of credit hours which may be considered for transfer credit is the greater of 12 hours or one-third (1/3) of the total hours of a degree plan. The following restrictions apply:
  - Graduate and/or upper-level undergraduate courses taken in residence at an accredited U.S. institution, or approved international institution with a final grade of B or greater will be considered for transfer credit if, at the time the courses were completed, the student was in degree-seeking status at Texas A&M University, or the student was in degree-seeking status at the institution at which the courses were taken; and if the courses would be accepted for credit toward a similar degree for a student in degree-seeking status at the host institution.
  - Courses previously used for another degree are not acceptable for degree plan credit.
2. The maximum number of credit hours taken in post-baccalaureate non-degree (G6) classification at Texas A&M University which may be considered for application to the degree plan is 12.
3. A zero credit 684 or 685 course is only allowed for non-thesis option master's students. A zero credit 681 course can be used for either thesis or non-thesis option master's students. Other courses, including 691 research hours, are not eligible for zero credit.
4. Not more than 12 hours may be used in any combination of the following categories:
  - Not more than 8 hours in the combination of 691 (Research) or 684 (Professional Internship) may be used.

- Not more than 8 hours of 685 (Directed Studies) may be used.
  - Not more than 3 hours of 690 (Theory of Research) may be used.
  - Not more than 3 hours of 695 (Frontiers in Research) may be used.
5. A maximum of 2 hours of 681 (Seminar).
  6. A maximum of 9 hours of advanced undergraduate courses (300- or 400-level).
  7. For graduate courses of three weeks' duration or less, taken at other institutions, up to 1 hour of credit may be obtained for each five-day week of coursework. Each week of coursework must include at least 15 contact hours.
  8. Continuing education courses may not be used for graduate credit.
  9. Extension courses are not acceptable for credit.
  10. For non-distance degree programs, no more than 50 percent of the non-research coursework required for the program may be completed through distance education courses.
  11. To receive a graduate degree from Texas A&M University, students must earn one-third or more of the credits through the institution's own direct instruction. This limitation also applies to joint degree programs.

Exceptions will be permitted only in unusual cases and when petitioned by the student's advisory committee and approved by the Graduate and Professional School.

## Thesis Option

### On-Campus and Distance Education Degree Programs

An acceptable thesis is required for the Master of Science degree for a student who selects the thesis option program. The finished work must reflect a comprehensive understanding of the pertinent literature and express in clear English, the problem(s) for student, the method, significance, and results of the student's original research. Thesis formatting must be acceptable to the Graduate and Professional School as outlined in the Guidelines for Theses, Dissertations, and Records of Study.

After successful defense (or exemption) and approval by the student's advisory committee and the head of the student's major department (or chair of intercollegiate faculty, if appropriate), the student must submit the thesis in electronic format as a single PDF file to <https://etd.tamu.edu/>. Additionally, a thesis approval form with original signatures must be received by the Graduate and Professional School through the Academic Requirements Completion System (ARCS). Both the PDF file and the completed approval form must be received by the deadline.

Deadline dates for submitting the thesis are announced each semester or summer term in the "Graduate and Professional School Calendar" (see Time Limit statement). These dates also can be accessed *via* the Graduate and Professional School website (<http://grad.tamu.edu/>).

Each student who submits a manuscript for review is assessed a one-time thesis/dissertation processing fee through Student Business Services. This processing fee is for the thesis/dissertation services provided. After commencement, theses and dissertations are digitally stored and made available through the Texas A&M Libraries.

A thesis that is deemed unacceptable by the Graduate and Professional School because of excessive corrections will be returned to the student's department head (or chair of the intercollegiate faculty, if applicable). The manuscript must be resubmitted as a new document, and the entire review process must begin again. All original submittal deadlines must be met during the resubmittal process to graduate.

### Thesis Proposal

For the thesis option Master of Science degree, the student must prepare a thesis proposal for approval by the advisory committee and the head of the major department or chair of the interdisciplinary faculty, if applicable. This proposal must be submitted to the Graduate and Professional School at least 20 working days prior to the submission of the request for the final examination.

Compliance issues must be addressed if a graduate student is performing research involving human subjects, animals, infectious biohazards and recombinant DNA. A student involved in these types of research should check with the Office of Research Compliance and Biosafety at (979) 458-1467 to address questions about all research compliance responsibilities. Additional information can also be obtained on the Office of Research Compliance and Biosafety website.

### Final Examination/Thesis Defense

A student must pass a final examination by dates announced each semester or summer term in the Graduate and Professional School Calendar (<https://grad.tamu.edu/knowledge-center/dates-and-deadlines/dates-and-deadlines/>). To be eligible to take the final examination, a student's GPA must be at least 3.000 for courses on the degree plan and for all courses completed at Texas A&M which are eligible to be applied to a graduate degree, and there must be no unabsolved grades of D, F or U for any course listed on the degree plan. To absolve a deficient grade, the student must repeat the course at Texas A&M University and achieve a grade of C or better. All coursework on the degree plan must have been completed with the exception of those hours for which the student is registered. For thesis-option students, an approved thesis proposal must be on file in the Graduate and Professional School according to published deadlines prior to the final examination or submission of the request for exemption from the final examination.

A request to schedule the final examination must be submitted to the Graduate and Professional School *via* ARCS a minimum of 10 working days in advance of the scheduled date for the examination. The Graduate and Professional School will be notified *via* ARCS of any cancellations. A student may be given only one opportunity to repeat the final examination for the master's degree and that must be within a time period that does not extend beyond the end of the next regular semester (Summer terms are excluded).

For thesis option students, the final examination covers the thesis and all work taken on the degree plan and at the option of the committee may be written or oral or both. The final examination may not be administered before the thesis is available to all members of the student's advisory committee in substantially final form, and all members have had adequate time to review the document. The examination is conducted by the student's advisory committee as finally constituted. A thesis option student must be registered at the university in the semester or summer term in which the final examination is taken. Persons other than members of the graduate faculty may, with mutual consent of the candidate and the major professor, attend final examinations for advanced degrees. Upon completion of the questioning of the candidate, all visitors must excuse themselves from the proceedings. A positive vote by all members of the graduate committee with at most one dissension is required to

pass a student on their exam. A department, or interdisciplinary degree program, may have a stricter requirement provided there is consistency within all degree programs within a department or interdisciplinary degree program.

### Final Examination Grading

The student's advisory committee will conduct this examination. The student's department will promptly report the results of the Final Examination to the Graduate and Professional School *via* the Academic Requirements Completion System (ARCS) within 10 working days of completion of the final examination. If an approved committee member substitution (one only) has been made, their approval must be submitted to the Graduate and Professional School *via* ARCS.

If the program requires the advisory committee to include at least one external member – with an appointment to a department other than the student's major department – and the substitution is for the sole external member of the advisory committee, then the substitute must also be external to the student's major department. In extenuating circumstances, with approval of the Graduate and Professional School, an exception to this requirement may be granted.

A thesis option candidate may petition to be exempt from their final examination provided their degree plan GPA is 3.500 or greater and they have the approval of the advisory committee, the head of the student's major department, or intercollegiate chair, if appropriate, and the Graduate and Professional School. It is required that the petition for exemption be submitted in the same semester the student intends to submit the thesis.

## Non-Thesis Option

### On-Campus Degree Program

The final examination is not required for the non-thesis option Master of Science in Biomedical Sciences. The student will instead be required to successfully complete a capstone portfolio defined in the curriculum of the degree program. The capstone portfolio must be completed in the final semester of the student's program, as this capstone replaces the final exam. The capstone deadline is to follow the university graduation dates and deadlines calendar located at Graduate and Professional School - Dates and Deadlines (<https://grad.tamu.edu/knowledge-center/dates-and-deadlines/>) for any given semester.

A student pursuing the non-thesis option is not allowed to enroll in 691 (Research) for any reason and 691 may not be used for credit toward a non-thesis option Master of Science degree. A maximum of 4 credit hours of 684 (Professional Internship), 8 credit hours of 685 (Directed Studies), and up to 3 credit hours of 690 (Theory of Research) or 695 (Frontiers in Research) may be used toward the non-thesis option Master of Science degree. In addition, any combination of 684, 685, 690 and 695 may not exceed 25 percent of the total credit hour requirement shown on the individual degree plan. All requirements for the non-thesis option Master of Science degree other than those specified above are the same as for the thesis option degree.

The department head or the chair of intercollegiate faculty, if appropriate, for the program may approve an exception for a PhD student who changes to a non-thesis option MS degree program after at least one year of PhD studies to use 691 credits toward a non-thesis option Master of Science degree. The department head or chair of intercollegiate faculty, if appropriate, for the program may approve an exception for a master's student who changes from a MS thesis option degree to a MS non-thesis option degree program to use 691 credits toward a non-thesis option

Master of Science degree. In both cases, the student is allowed to use a maximum of 8 credit hours of 685 and 691 combined. Departments, colleges, and interdisciplinary degree programs may opt to establish higher standards. Further, any combination of 684, 685, 690, 691 and 695 may not exceed 25 percent of the total credit hour requirement shown on the individual degree plan. All requirements for the non-thesis option Master of Science degree other than those specified above are the same as for the thesis option degree.

### Distance Education Degree Program

The distance modality is not available for non-thesis option students.

## Additional Requirements

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- Residence (p. 4)
- Continuous Registration (p. 4)
- Time Limit (p. 5)
- Foreign Languages (p. 5)
- Application for Degree (p. )
- Capstone Portfolio (p. 5)

## Residence

### On-Campus Degree Program

In partial fulfillment of the residence requirement for the degree of Master of Science, the student must complete 9 resident credit hours during one regular semester or one 10-week summer semester in resident study at Texas A&M University. Upon recommendation of the student's advisory committee, department head or chair of the interdisciplinary program, if appropriate, and with approval of the Graduate and Professional School, a student may be granted exemption from this requirement. Such a petition, however, must be approved prior to the student's registration for the final 9 credit hours of required coursework.

Students who are employed full-time while completing their degree may fulfill total residence requirements by completion of less-than-full time course loads each semester. In order to be considered for this, the student is required to submit a Petition for Waivers and Exceptions along with verification of his or her employment to the Graduate and Professional School.

See Residence Requirements (<http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degreerequirementstext>).

### Distance Education Degree Program

The distance education modality does not have a residence requirement.

## Continuous Registration

### On-Campus and Distance Education Degree Programs

A student in the thesis option of the Master of Science program who has completed all coursework on his or her degree plan other than 691 (Research) is required to be in continuous registration until all requirements for the degree have been completed.

See Continuous Registration Requirements (<http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#registrationandacademicstatustext>).

## **Time Limit**

### **On-Campus and Distance Education Degree Programs**

All degree requirements must be completed within a period of seven consecutive years for the degree to be granted. A course will be considered valid until seven years after the end of the semester in which it is taken. Graduate credit for coursework which is more than seven calendar years old at the time of the final examination (oral or written) may not be used to satisfy degree requirements.

A student who has chosen the thesis option must have the final corrected copies of the thesis cleared by the Graduate and Professional School within one year of the semester in which the final exam is taken, or a final exam exemption petition was approved. Exams taken in between terms will expire at the end of the term that ended prior to the exam. For example, a final exam taken and passed during the Fall 2022 semester will expire at the end of the Fall 2023 semester. A final exam taken in the time between the Summer and Fall 2022 semesters will expire at the end of the Summer 2023 semester.

## **Foreign Languages**

### **On-Campus and Distance Education Degree Programs**

No specific language requirement exists for the Master of Science degree.

## **Capstone Portfolio**

An additional degree requirement for the Master of Science in Biomedical Sciences non-thesis degree program is a capstone experience that is documented in a professional portfolio that is intended to serve as a blueprint for success in the program. Under the direction of the student's faculty mentor, this portfolio will be further refined into a document showcasing the accomplishments and personal and professional growth of the student in preparation for further professional education. In addition to successfully completing coursework in fundamental biomedical sciences, the student will be coached by the mentor to improve their competitiveness for professional school admission. Common areas of focus include experiential learning (such as professional shadowing, internships, and directed studies), the identification and grooming of professional track references, and strategic preparation for professional school standardized admissions test requirements. The capstone portfolio document must be submitted to the School of Veterinary Medicine and Biomedical Sciences Office of Research and Graduate Studies by the last day for non-thesis option master's students to take the final examination in the term of graduation as defined by Texas A&M Graduate and Professional School calendar.