Genomics- Functional Genomics Emphasis, MS

Program Description

The Master of Science in Genomics is designed to support workforce readiness and academic advancement. The program provides flexible pathways, including a 5-year BS/MS option for UT undergraduates to complete both bachelor's and master's degrees in five years, as well as a two-year track for external students. With emphases in Bioinformatics and Functional Genomics, the curriculum integrates computational skills, such as genomic data analysis and machine learning, with experimental techniques, including CRISPR/Cas9 gene editing and 3D organoid modeling, ensuring students are prepared for industry roles or further graduate studies.
Grounded in active, hands-on learning, the program emphasizes lab-based and project-driven experiences that foster practical skills critical for careers in the life sciences. Cross-training in both emphases ensures a comprehensive understanding of genomics by blending computational and experimental methodologies. This proposal exemplifies UT's commitment to innovation, accessibility, and excellence in education, advancing its polytechnic mission to meet the evolving demands of the workforce.

Admission Requirements

1. BS from a regionally accredited institution in Biology, Biochemistry, or a closely related field, or are on track to complete a BS within the next academic year.
2. Successful completion of the following courses (or equivalent at a local institution): A. Functional Genomics Emphasis.
   i. BIOL 3030 Principles of Genetics
   ii. BIOL 3330 Cell Biology
   iii. BIOL 4300 Molecular Bio
   iv. CHEM 3510 Biochemistry I
   B. Bioinformatics Emphasis
   i. BIOL 1610 Principles of Biology
   ii. CS 1400 Fundamentals of Programming
   iii. BIOL 3300 Intro to Bioinformatics
3. Cumulative GPA of 3.0 or higher.
4. Submit a personal statement of your career goals and why you feel this program will support your goals.
5. Submit Official transcripts
6. Submit Curriculum Vitae (CV).
7. Submit two (2) letters of support.
8. Submit a video interview discussing specific question prompts.

Program Curriculum

30 Credits

Code	Title	Hours
Required College-Level Prerequisite Courses		
BIOL 3030	Principles of Genetics	3
BIOL 3550	Eukaryotic Cell Biology	3
BIOL 4300	Molecular Biology	3
CHEM 3510	Biochemistry I	3

Program Required Courses

Code	Title	Hours
BIOL 5100/6100	Biomedical Research Ethics	1
BIOL 5320/6320	Scripting For Biologist	3
BIOL 5330/6330	Genomics & Precision Medicine	3
BIOL 5910/6910	Genomics Seminar I	1
BIOL 5920/6920	Genomics Seminar II	1
BIOL 6930	Research in Progress I	1
BIOL 6940	Research in Progress II	1

Complete six (6) credits of Genomics Capstone		
BIOL 5900R/6900R	Genomics Capstone	1-3

Program Electives

Code	Title	Hours
Students must meet with their Advisor before registering for electives		
BIOL 6990R	Directed Studies	1-3
BIOL 6105R	Genomics Lab Rotation	1-3

Functional Genomics Emphasis Courses

Code	Title	Hours
BIOL 5050/6050	Histology	2
BIOL 5550/6550	Advance Cell Biology	2
BIOL 5555/6555	Advance Cell Culture	2
BIOL 5630/6630	3D Cell Culture	2
BIOL 6430	Genetic Engineering	3
BIOL 6500	Stem Cell Biology	2

Graduation Requirements

1. Complete the required 30-32 hours of coursework.
2. Earn a 3.0 or higher GPA for the entire program.
3. Receive no less than a B- in any of the program courses.