

OKLAHOMA
STATE
UNIVERSITY



Bioinformatics Certification Graduate Program

**Data-Enabled Cross-training and Hands-on Experience from a National
Leader in Interdisciplinary Research and Diversity**

**Get Serious.
Get a Job.**

Bioinformatics Mission Statement

The mission of the Bioinformatics Certificate Program is to train post-baccalaureate students in interdisciplinary techniques required to generate, analyze, and interpret complex biologically derived data sets. Departments from across the university participate. A cohesive curriculum provides essential training in bioinformatics and computational biology.

Program Structure

The Certificate requires completion of 16 graduate level course credit hours. A required capstone project demonstrates mastery of bioinformatics technologies. A minimum of 12 credit hours must be at the 5000 level or above.

Nine credit hours are from the core areas of life science, statistics, math, and computer science. Student preference will guide the selection of a 3-credit hour elective course approved by the Program Committee.

Admissions

To enroll in the Graduate Certificate program, students are required to have a bachelor's degree preferably in computer science, statistics, mathematics, life sciences or related fields. Students can participate in this certificate program while concurrently enrolled in an M.S. or Ph.D. degree program.

Admission forms can be obtained by following the prompt to the Bioinformatics Certificate as a degree choice at the web address listed below:

<https://app.it.okstate.edu/gradcollege/>

Primary Student Learning Outcomes

- *To understand terminologies, technologies, and concepts used in the analysis of data related to genomes and genome structures.*
 - *To acquire cross-disciplinary knowledge and independently design bioinformatics projects and organize collaborators of appropriate expertise across the core disciplines of life sciences, computer sciences, and statistics.*
 - *To develop a set of skills including text mining/formatting, basic statistics, basic programming script, and use of genomic information and databases appropriate to their long-term employment.*
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Curriculum

REQUIRED Foundation Courses (hours credit)

MICR 5203 Bioinformatics (3)

BIOC 5930 Bioinformatics Capstone Project (1)

SELECTED Interdisciplinary Courses

Life Sciences Core Courses

BIOC 6820 Bioinformatics Workshop (1-3)
BIOC 6820 Mass Spectrometry Workshop (1-2)
BIOC 6733 Functional Genomics (3)
BIOC 5102 Molecular Genetics (2)
BOT 5553 Molecular Phylogenetic Analysis
BIOC 5723 Intro to Bioinformatics (3)
ANSCI R. programming in animal sciences (1)
BOT 5110-365 Phylogenomics (1)
BOT 5110 Biostatistics
MICR 6223 Molecular Environmental Microbiology and Ecology (3)
BIOC 6820 Intro Biological Informatics (3)

Statistics Core Courses

STAT 6013 Genetic Statistics (3)**
STAT 5013 Stat Experimenters I (3)
STAT 5023 Stat Experimenters II (3)
STAT 5093 Statistical Computing (3)
***PREFERRED, others must be approved by the Advisory Committee*

Computer Science Core Courses

CS 5423/5433 Principles of Database Systems/BigData Management Systems (3)
CS 5070 Data Structures and Algorithms for Bioinformatics (3)

Math and Engineering Core Courses

MATH 6590 Appl. of Parallel Computing (1)
CHE 5753 Applied Numerical Computing (3)

Elective Courses (3)

Graduate-level course approved by the Bioinformatics Certificate Program Committee.

WORKSHOPS (Highly encouraged)

The Carpentries Genomics
The Carpentries Python
The Carpentries Perl
The Carpentries R
The Carpentries MySQL

Application Deadlines

Graduate students enrolled at OSU who are planning to graduate in the **Spring** semester have an application deadline of **March 1**, of the graduating year.

Graduate students enrolled at OSU who are planning to graduate in a **Summer** semester have an application deadline of **June 1** of the graduating year.

Graduate students enrolled at OSU who are planning to graduate in a **Fall** semester have an application deadline of **October 1**, of the graduating year.

Applications from those not already enrolled at OSU who are planning to enter the certificate program must apply by **October 1** for **Fall** enrollment or **March 1**, for **Spring** enrollment.

Documents for Application:

Transcripts (must have B.S. or equivalent)*

Application Fee*

TOEFL Score*

Curriculum Vitae or resume

A “Personal Statement” of your interest and goals from the program

Graduate Students must submit letter of support from major professor

**Graduate College Certificate Requirements (*Ask about SARS nCov-2 pandemic exemptions*)

Learn more about General Graduate College academic regulations for minimal GPA, language proficiency and other general requirements in 2021-2022 Graduate Certificate Program Requirements (<http://catalog.okstate.edu/graduate-college/>).

Transfer of Courses

With the approval of the Bioinformatics Certificate Program Committee and the Graduate College, up to 3 hours of graduate-level credit from another institution may be used toward certificate requirements. The GPA must be at least 3.0 on any transfer credit.

Correspondence:

Bioinformatics Certificate Program Committee

c/o Graduate Secretary

bioinformatics@okstate.edu

Dept. Biochemistry & Molecular Biology

246B Noble Research Center

Stillwater, OK 74078

Phone 405-744-9320

Fax 405-744-7799

More program information is available at:

<http://genomics.okstate.edu/>

Oklahoma State University

go.okstate.edu

Admissions

<https://grad.okstate.edu/apply/>

Tuition and Fees

https://bursar.okstate.edu/tuition_fees/tuition_fees.html

Financial Aid

<https://go.okstate.edu/scholarships-financial-aid/>

Living and Housing

<https://reslife.okstate.edu/>

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