CERTIFICATE IN DATA SCIENCE AND MACHINE LEARNING FOR BIOTECHNOLOGY

The interdisciplinary field of Data Science (DS) has emerged as one of the fastest-growing fields of our times. One of the most impactful applications of Data Science has been for the field of Biotechnology. Statistical modeling and Machine Learning (ML) are being increasingly used to investigate long-standing problems in biotechnology and to develop solutions to some of the most critical challenges of our times.

The certificate program is designed to provide a strong foundation in theory, tools, and techniques of machine learning and data science for biotechnology. Students will learn and practice the skills involved in synthesizing machine learning and data science concepts around the big questions in biotechnology to solve real-life problems. Students will also gain experience in effective scientific communication skills that are needed to convey information to multidisciplinary audiences from different functional areas of the biotechnology field.

Admission to this undergraduate certificate program requires current undergraduate enrollment at SFSU as well as a grade point average of at least 2.5 in the last 60 semester units attempted. Students must have a grade of C or higher in BIOL 230 or BIOL 100 and a grade of C or higher in CSC 219 or CSC 220.

The application material will consist of:

a. Statement of purpose
b. Current and previous transcripts

All courses for the certificate must be completed with a minimum GPA of 2.5.

Learning Outcomes

a. Demonstrate proficiency in the fundamentals of data science and machine learning for biotechnology: theory, tools, and techniques.

b. Demonstrate ability to synthesize machine learning and data science concepts around the big questions in biotechnology to develop solutions to real-life problems.

c. Demonstrate effective scientific communication skills, verbal and written, to convey information to multidisciplinary audiences from different functional areas of the biotechnology field.

Certificate in Data Science and Machine Learning for Biotechnology – 12 units

Code	Title	Units
CSC 408	Machine Learning and Data Science for Personalized Medicine	3
CSC 411	Introduction to Machine Learning for Interdisciplinary Data Scientists	3
Select One:		3
CSC 509	Data Science and Machine Learning for Medical Image Analysis	
CSC 621	Biomedical Imaging and Analysis	
CSC 601	Data Science and Machine Learning for Biotechnology Seminar Series	1
CSC 602	Interview Preparation for Data Science and Machine Learning for Biotechnology Opportunities	2