CITY COLLEGE OF SAN FRANCISCO

OFFICE OF INSTRUCTION

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Catalog Update for 2024-25 College Catalog

Last Updated: September 5, 2024

Programs

The following programs shall be considered included in the 2024-25 College Catalog, with the effective date noted below.

Department	Program	Effective Date
Biology	Associate in Science in Biology for Transfer - REVISED	Fall 2024
Computer Networking & Information Technology	Certificate of Achievement in Security for Web App Development - NEW	Fall 2024
Mathematics	Associate in Science in Mathematics for Transfer - REVISED	Fall 2024
Social Sciences	Associate in Arts in Philosophy for Transfer - REVISED	Fall 2024
Social Sciences	Associate in Arts in Political Science for Transfer - REVISED	Fall 2024

BIOLOGY

Associate in Science in Biology for Transfer (AS-T) - REVISED

Biology is the scientific study of life through the observation of structure, function, reproduction, growth, origin, evolution, and behavior of living organisms and their relation to each other and their environment. Biologists have deepened our understanding of processes and interactions on all levels of biological organization from elucidating cellular processes to fight cancer to also assessing interactions in communities that might help prevent the extinction of species. Studying biology provides a background for students to evaluate and understand new discoveries and to make informed decisions about the use of scientific knowledge to benefit all living organisms. The Associate of Science in Biology for Transfer (AS-T) prepares students for upper-division biology courses, including general biology, cell or molecular biology, organism biology, marine biology, botany, zoology, ecology, evolution, genetics, anatomy, physiology, microbiology, and agricultural sciences. The AS-T in Biology is designed to prepare students for transfer to a baccalaureate degree program in biology, particularly at the California State University system.

Learning Outcomes
Upon completion of this program, students will be able to:

- Interrelate the scientific method, scientific research and established scientific knowledge.
- Communicate scientific hypotheses, theories, and findings.
- Summarize major scientific and mathematical concepts necessary for a foundation in biological sciences.
- Apply laboratory skills fundamental to biological investigations.
- Analyze and interpret scientific data relevant to a foundation in biological sciences.

Degree Requirements: Students who wish to earn the Associate in Science in Biology for Transfer must complete 60 CSU transferable units with at least a 2.0 grade point average. This must include the units required for completion of either IGETC for STEM or CSU GE for STEM and the units for the major as specified below. Each course in the major must be completed with a grade of "C" (or "P") or better. The IGETC for STEM and CSU GE for STEM options permit students completing the AS-T in Biology to follow the IGETC or CSU GE curriculum but delay one Arts or Humanities course and one Social or Behavioral Science course until after transfer. Courses used to meet the major requirement may also be used to meet IGETC or CSU GE requirements.
The minimum time for completion is 4 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the AS-T in Biology

Course	**Units**
Required Biology	
BIO 100A General Biology	5.0
BIO 100B General Biology	5.0
Required Chemistry	
CHEM 101A General College Chemistry	6.0
CHEM 101B General College Chemistry	5.0
Choose one of the following Calculus courses	
MATH 100A Short Calculus I	3.0
MATH 110A Calculus I	5.0
Choose one of the following Physics options	
OPTION 1	
PHYC 2A Introductory Physics I	3.0
PHYC 2AL Introductory Physics Laboratory I	1.0
PHYC 2B Introductory Physics II	3.0
PHYC 2BL Introductory Physics Laboratory II	1.0
OPTION 2	
PHYC 4A Classical Mechanics for Scientists and Engineers	3.0
PHYC 4AL Mechanics Laboratory for Scientists and Engineers	1.0
PHYC 4B Electromagnetism for Scientists and Engineers	3.0
PHYC 4BL Electromagnetism Laboratory for Scientists and Engineers	1.0
Total:	**32.0 – 34.0**

COMPUTER NETWORKING & INFORMATION TECHNOLOGY

Security for Web App Development Certificate of Achievement - NEW

The program of study for the Certificate of Achievement in Security for Web App Development includes instruction and practice in the development of web sites and web apps using the most current security techniques. This course of study prepares students for adapting and creating web sites with techniques that enhance the security of those applications.

Learning Outcomes
Upon completion of this program, students will be able to:

- Use front-end web development techniques to develop and publish web sites or web apps for different platforms.
- Compare the different methods for securing shared resources used by web apps.
- Evaluate the different types of security problems that might occur in a web application project.
- Implement effective web application security techniques.

The minimum time for completion of this certificate is 2 semesters. Completion time will vary based on student preparation and number of classes completed per semester.

Courses Required for the Certificate of Achievement in Security for Web App Development

Course	**Units**
Required	
CNIT 131 Internet Basics and Beginning HTML	3.0
or CNIT 131H Introduction to HTML and CSS	1.0
CNIT 120 Network Security	3.0
CNIT 132 Intermediate HTML and CSS	3.0
CNIT 133 JavaScript, jQuery, AJAX	3.0
CNIT 129S Securing Web Applications	3.0
Choose one of the following courses	
CNIT 131A XML and JSON	3.0
or CS 150A Introduction to SQL Databases and NoSQL	3.0
Total:	**16.0 – 18.0**

MATHEMATICS

Associate in Science in Mathematics for Transfer (AS-T) - REVISED

The AS-T in Mathematics is designed to provide students with sufficient understanding of mathematical concepts, skills, and applications to succeed in upper division coursework in mathematics at a four-year college or university. Students who complete this degree are guaranteed acceptance to a California State University but are not guaranteed acceptance to a particular CSU campus or major. Students who plan to transfer to any other college or university should consult that institution's catalog for specific transfer requirements.

Learning Outcomes
Upon completion of this program, students will be able to:

- Demonstrate computational and conceptual proficiency in differential and integral calculus, both single and multi-variable.
- Assess and construct valid mathematical arguments.
- Use appropriate concepts and techniques from calculus and post-calculus mathematics to solve applied problems.
- Describe and utilize rules of formal systems.

Students who wish to earn the Associate in Science in Mathematics for Transfer (AS-T) must complete 60 CSU transferable units with at least a 2.0 grade point average. This must include the units required for full completion of the IGETC or CSU GE curriculum and the units for the major as specified below. Each course in the major must be completed with a grade of "C" or "P" or better. Courses used to meet the major requirement may also be used to meet IGETC or CSU GE requirements.
The minimum time for completion of this degree is 4 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the AS-T in Mathematics

Course	**Units Required**
MATH 110A Calculus I	5.0
MATH 110B Calculus II	5.0
MATH 110C Calculus III	5.0
Choose OPTION 1 or OPTION 2	
OPTION 1	
MATH 120 Linear Algebra	3.0
Choose one course or course combination from the following	
MATH 80 Probability and Statistics	5.0
MATH 115 Discrete Mathematics	3.0
MATH 125 Differential Equations	3.0
CS 110A Introduction to Programming and Computer Science	4.0
PHYC 4A Classical Mechanics for Scientists and Engineers	3.0
and PHYC 4AL Mechanics Laboratory for Scientists and Engineers	1.0
OPTION 2	
MATH 130 Linear Algebra and Differential Equations	5.0
Choose one course or course combination from the following	
MATH 115 Discrete Mathematics	3.0
CS 110A Introduction to Programming and Computer Science	4.0
PHYC 4A Classical Mechanics for Scientists and Engineers	3.0
and PHYC 4AL Mechanics Laboratory for Scientists and Engineers	1.0
Total:	**21.0 – 24.0**

SOCIAL SCIENCES

Associate in Arts in Philosophy for Transfer (AA-T) - REVISED

Philosophy is the study of the most fundamental questions of life, reality, knowledge, and value. Through the study of philosophy, students are trained in the skills of conceptual analysis and argument comprehension, construction, and evaluation. It provides an intensive introduction to the science of logic, with emphasis on the concept of proof and symbolic systems for calculating truth-value relationships. The philosophy major will also introduce students to philosophical theories in the tradition from its ancient beginnings to its contemporary developments. The AA-T in Philosophy offers students a comprehensive lower division program in philosophy. The AA-T prepares students who wish to transfer and pursue a baccalaureate degree in Philosophy, particularly at California State University and University of California campuses.

Learning Outcomes

Upon completion of this program, students will be able to:

- Analyze major theories of perennial influence in the main areas of philosophy, metaphysics, epistemology, and value theory.
- Analyze important philosophical issues and concepts, and evaluate alternative views with respect to them.
- Apply the principles of logical reasoning, both deductive and inductive.
- Construct fluent philosophical arguments.
- Apply critical reasoning skills to identify, evaluate, and respond to arguments.

Students who wish to earn the Associate in Arts for Transfer (AA-T) in Philosophy must complete 60 CSU transferable units with at least a 2.0 grade point average. This must include the units required for full completion of the IGETC or CSU GE curriculum and the units for the major as specified below. Each course in the major must be

completed with a grade of “C” (or “P”) or better. Courses used to meet the major requirement may also be used to meet IGETC or CSU GE requirements.
The minimum time for completion is 4 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the AA-T in Philosophy

Course	**Units Required**
PHIL 12A Symbolic Logic	5.0
PHIL 2 Introduction to Philosophy: Morality and Politics	3.0
or PHIL 4 Introduction to Philosophy: Knowledge and Its Limits	3.0
Choose one course from the following*	
PHIL 25A Ancient Philosophy	3.0
PHIL 25C Modern Philosophy Through Kant	3.0
*or any course not selected above	
Choose three courses from the following*	
HIST 4A Western Civilization	3.0
HIST 4B Western Civilization	3.0
HUM 8 Philosophies of Religion	3.0
HUM 41A Western Cultural Values: Pre-history to the Middle Ages	3.0
HUM 41B Western Cultural Values	3.0
PHIL 40 Introduction to Logic: Critical Thinking	3.0
*or any course not selected above	
Total:	**20.0**

Associate in Arts in Political Science for Transfer (AA-T) - REVISED

Political Science is the study of governments, power relations, public policies, political theories, political processes, and political behavior. The Political Science major is designed to develop knowledge, analytical skills, and critical insight into the nature of politics and political problems. Political Science subfields include American government, political theory, comparative politics, and international relations, and the major introduces each of these. The aim is to prepare students for active participation in political life, as informed citizens or residents, and to prepare students for transfer to a four-year university in the field of Political Science, and then to a range of possible careers.

Learning Outcomes

Upon completion of this program, students will be able to:

- Identify and explain American political principles.
- Analyze and critique current political topics and issues.
- Assess the forms and processes of political participation at the local, state, national, and/or international levels.
- Evaluate and compare the structure and function of different political systems in the world, as well as the international system itself.
- Analyze different political theories, especially liberalism and conservatism.
- Analyze the historical and philosophical foundations of the United States and California constitutions.
- Examine complex political issues by selecting and using appropriate social science methodologies and approaches, including the analysis of primary sources and the development, evaluation, and testing of hypotheses using the scientific method.

Students who wish to earn the Associate in Arts in Political Science for Transfer (AA-T) must complete 60 CSU transferable units with at least a 2.0 grade point average. This must include the units required for full completion of the IGETC or CSU GE curriculum and the units for the major as specified below. Each course in the major must be completed with a grade of “C” or “P” or better. Courses used to meet the major requirement may also be used to meet IGETC or CSU GE requirements.

The minimum time for completion of this certificate is 4 semesters. Completion time will vary based on student preparation and number of units or classes completed per semester.

Courses Required for the AA-T in Political Science

Course	**Units Required**
POLS 1 American Government	3.0
POLS 2 Comparative Government	3.0
POLS 3 Political Theory	3.0
POLS 5 International Relations	3.0
Choose at least 6 units from the following courses	
ECON 5 Introductory Statistics for Economics, Business and Social Sciences	5.0
POLS 4 The Politics of Globalization	3.0
POLS 12 Ethnic Politics in the United States	3.0
POLS 15 Introduction to Public Policy	3.0
POLS 18 Government & Politics of Latin America	3.0
POLS 19 Gender, Politics, and Policy	3.0
POLS 22 Environmental Politics and Policy	3.0
POLS 43 The Constitution and Individual Rights	3.0
POLS 45 Governments and Politics of Middle East	3.0
POLS 41 Independent Studies in Political Science	1.0
Total:	**18.0 – 20.0**