

Glendale College

Course Outline of Record Report

Course ID 005202
Archived - April 2025

CS/IS130 : Introduction To Algorithms

General Information

Author:	<ul style="list-style-type: none"> Vladimir Paransky
Course Code (CB01) :	CS/IS130
Course Title (CB02) :	Introduction To Algorithms
Department:	CSIS
Proposal Start:	Fall 2025 (Fall 2026)
TOP Code (CB03) :	(0707.00) Computer Software Development
CIP Code:	(11.0201) Computer Programming/Programmer, General.
SAM Code (CB09) :	C - Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000246649
Curriculum Committee Approval Date:	04/09/2025
Board of Trustees Approval Date:	12/17/2024
Last Cyclical Review Date:	11/13/2024
Course Description and Course Note:	CS/IS 130 is a course in programming, algorithm development and problem-solving using both object-oriented and structured approaches. It introduces students to the study of syntax and data structures with applications in science, engineering, and industry. This course is suitable for students planning to transfer and those wishing to develop a marketable skill.
Justification:	<p>Mandatory Revision</p> <p>This course was archived in the catalog and in PeopleSoft in Fall 2026 because it was being offered in Fall 2025. I could not change the proposal start.</p>
Academic Career:	<ul style="list-style-type: none"> Credit
Mode of Delivery:	No value
Author:	No value
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none"> Computer Science
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	108
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience Education

Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	0	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	54

Laboratory	0
Studio	0
Total	54
Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Studio	0
Total	108

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

Prerequisite

CS/IS112 - Introduction To Programming Using Java

Objectives

- Examine problems, apply logic, and provide solutions/algorithms for the problems.
- Show the solution/algorithm using flowcharts or pseudocode.
- Utilize a compiler to write, debug, and test Java programs.

Entry Standards

Entry Standards	Description
No value	No value

Course Limitations	
Cross Listed or Equivalent Course	Description
No value	No value

Specifications	
Methods of Instruction	
Methods of Instruction	Lecture
Methods of Instruction	Demonstrations

Out of Class Assignments
 Programming assignments (e.g. write a simple program incorporating objects, functions and methods).

Methods of Evaluation	Description of Activity/Interaction
Project/Portfolio	Final project. a capstone project and presentation
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Midterm examinations
Project/Portfolio	Programming projects

Textbook Rationale
 No Value

Textbooks				
Author	Title	Publisher	Date	ISBN
Gaddis, Tony.	Starting Out with JAVA: From Control Structures through Objects	Upper Saddle River: Prentice Hall,	2019	9780134802213

Other Instructional Materials (i.e. OER, handouts)
 No Value

Learning Outcomes

Course Objectives

Write simple programs using basic unstructured data types.

Use procedures for problem-solving and modularity.

Use objects for data encapsulation.

Develop algorithms and select an appropriate combination of algorithm and data structures for various problems.

Write complex programs using structured data types, objects, parameters, functions and recursion.

Describe and perform basic operations with reference variables, linked lists, and binary trees.

Convert simple documentation into basic programming including looping and decision.

Demonstrate how to refine a program into two or more modules.

SLOs

Analyze problems and provide logical solutions.

Expected Outcome Performance: 70.0

CSIS
Computer Programmer
Certificate

Analyze a programming task/problem; based on that analysis, design and implement an object oriented program using multiple classes in a high level language

Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology

ILOs
Core ILOs

Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.

Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.

Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

CS/S Computer Information Systems Certificate	Analyze simple business or technical problems relevant to programming, and prepare solutions to them;
	Demonstrate an understanding of the operations and processes of a computer relevant to programming
	Implement a program in either C/C++ or Java, using objects
CS/S Computer Information Systems A.S. Degree	Analyze simple business or technical problems relevant to programming, and prepare solutions to them;
	Demonstrate an understanding of the operations and processes of a computer relevant to programming
CS/S Computer Software Technician Certificate	Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
	Write a computer program using either C/C++, Java, or Visual Basic
CS/S Computer Software Technician A.S. Degree	Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
	Write a computer program using either C/C++, Java, or Visual Basic
CS/S Computer Science A.S. Degree	Prepare a software project to implement a single scientific, mathematical, business, or technical function
CS/S Computer Science Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function
CS/S Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CS/S Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CS/S Computer Information Systems	analyze simple business or technical problems relevant to programming, and prepare solutions to them
	demonstrate an understanding of the operations and processes of a computer relevant to programming.
	implement a program in either C/C++ or Java, using objects
ILOs General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues
CS/S Computer Software Technician	demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
CS/S Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
CS/S Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
Outline solutions in a systematic fashion.	
Expected Outcome Performance: 70.0	
CS/S Computer Programmer Certificate	Analyze a programming task/problem; based on that analysis, design and implement an object oriented program using multiple classes in a high level language
	Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
CS/S Computer Information Systems A.S. Degree	Analyze simple business or technical problems relevant to programming, and prepare solutions to them;
	Demonstrate an understanding of the operations and processes of a computer relevant to programming

CSIS Computer Information Systems Certificate	Analyze simple business or technical problems relevant to programming, and prepare solutions to them; Demonstrate an understanding of the operations and processes of a computer relevant to programming Implement a program in either C/C++ or Java, using objects
ILOs Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
CSIS Computer Software Technician Certificate	Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology Write a computer program using either C/C++, Java, or Visual Basic
CSIS Computer Software Technician A.S. Degree	Demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology Write a computer program using either C/C++, Java, or Visual Basic
CSIS Computer Science A.S. Degree	Prepare a software project to implement a single scientific, mathematical, business, or technical function
CSIS Computer Science Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function
CSIS Computer Science - Certificate	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
CSIS Computer Science - A.S. Degree Major	Prepare a software project to implement a single scientific, mathematical, business, or technical function.
ILOs General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues
CSIS Computer Information Systems	demonstrate an understanding of the operations and processes of a computer relevant to programming.
CSIS Computer Software Technician	demonstrate the ability to independently create, save, modify and print a document using a word processing program and appropriate assistive technology
CSIS Web Development - Certificate	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.
CSIS Web Development - A.S. Degree Major	use industry standard tools and techniques to produce, publish and maintain Web sites and Web content.

Course Content

Lecture Content

Introduction (4 hours)

- Problem definition
- Object concepts

Basic Concepts (4 hours)

- Data types
- Scalar data types
- Integer types
- Floating point types
- Character

Elementary Programs (4 hours)

- Elementary programs
- The assignment statement
- Program examples

Control Flow (5 hours)

- Looping statements
- Conditional statements
- Selection statements

Running, Debugging, and Testing Programs (6 hours)

- Debugging
- Program testing program
- Documentation and maintenance

Algorithm Development (5 hours)**Additional Data Types (6 hours)**

- User - defined
- Arrays
- Files

Functions and Methods (6 hours)

- Declaring and invoking a function
- Local and global variables
- Parameters – by reference and by value
- Recursion

Objects (8 hours)

- Declaring classes
- Inheritance
- Arrays of objects
- Files of objects

References and Linked Lists (6 hours)

- Reference variables
- Stacks and queues
- Linked lists
- Binary trees

Total hours - 54