

Computer Science (CPSC)

CPSC 109 Introduction to Computers and Applications 3 Credits (3,0)

Skills needed for office productivity software, including word processing, spreadsheets, and presentation tools. Overview of computer networking structures, Internet use, and TCP/IP protocols. Computer literacy supported by lectures, discussions, and readings on computing processes, impact on society, emerging technologies, and purchasing decisions.

Course Offered at: Daytona Beach, Prescott, Worldwide, Asia

CPSC 118 Fundamentals of Computer Programming 3 Credits (3,0)

Basic concepts of structured programming with applications in business, technology, and engineering. Intended for students with little or no programming experience.

Course Offered at: Daytona Beach, Prescott

CPSC 120 Introduction to Computing in Aviation 3 Credits (3,0)

Introduction to computer organization and applications. Data representation and file organization, basic network structure and behavior, impact of computers on society and business practices. Aviation-specific components include the use of computer simulation, instrumentation, and avionics systems.

Course Offered at: Daytona Beach

CPSC 123 Introduction to Computing for Data Analysis 3 Credits (3,0)

Techniques for turning data into actionable information. Utilization of advanced office productivity tools, modification of programming scripts, and presentation of data-based information for decision-making. No previous programming experience required.

Course Offered at: Worldwide, Asia

CPSC 125 Computer Science I 3 Credits (3,0)

Introduction to problem-solving methods, algorithm development, and software engineering. Software development process, program design, coding, review, testing, and documentation. Programming in a modern language supporting modular development. Closed laboratory for programming exercises.

Prescott Prerequisites: ENGR 115 or CPSC 118 (CE/EE/SE majors C or better)

Worldwide Prerequisites: ENGR 115

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 125L Computer Science I Laboratory 1 Credit (0,1)

Laboratory for Computer Science I.

Corequisites: CPSC 125

Course Offered at: Daytona Beach, Worldwide

CPSC 199 Special Topics in Computer Science 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in computer science.

Course Offered at: Daytona Beach, Prescott

CPSC 210 Web Page Authoring and Design 3 Credits (3,0)

Internet organization, addressing, routing, DNS. Use of FTP, telnet, and advanced web searching. Web page design using HTML and WYSIWYG software. Creation and refinement of web pages and graphics. Legal and ethical Internet issues.

Prerequisites: CPSC 109

Course Offered at: Prescott

CPSC 213 Introduction to Computer Networks 3 Credits (3,0)

Principles and practice of computer networking with emphasis on the Internet. Structure and components of computer networks, packet switching, layered architectures, TCP/IP, physical layer, error control, window flow control, LANs, network layer, congestion control, quality of service, and multicast.

Prerequisites: CPSC 118 or ENGR 115

Course Offered at: Prescott

CPSC 222 Introduction to Discrete Structures 3 Credits (3,0)

Combinatorics, Boolean logic, proof techniques, set theory, relations, and basic computational theory.

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 223 Scientific Programming in C 3 Credits (3,0)

C programming for scientists and engineers. Problem-solving approach for developing algorithms. Data types; input/output; control structures; functions; arrays; files; strings.

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 225 Computer Science II 3 Credits (3,0)

Introduction to object-oriented programming, data abstraction, information hiding, algorithm analysis, data structures, exception handling, string processing, recursion, software design and testing. A closed laboratory is included.

Daytona Beach Prerequisites: CPSC 223 or ENGR 115

Prescott Prerequisites: CPSC 125 and CPSC 223 (SE majors must have a C or better)

Worldwide Prerequisites: CPSC 223

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 225L Computer Science II Laboratory 1 Credit (0,1)

Laboratory emphasizing program design, data abstraction, information hiding, testing, advanced programming features, algorithm analysis, recursion, and object-oriented concepts.

Corequisites: CPSC 225

Course Offered at: Daytona Beach, Worldwide

CPSC 251 Introduction to Programming for Data Science 3 Credits (3,0)

Basic programming concepts for formatting and analyzing large data sets. Suitable for students with little or no programming experience.

Course Offered at: Worldwide

CPSC 299 Special Topics in Computer Science 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in computer science.

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 303 Cryptography and Network Security 3 Credits (3,0)

Principles and algorithms of modern encryption. Block ciphers (DES, Blowfish), public key encryption (RSA), statistical attacks, hash functions, digital signatures, authentication methods. Introduction to attacks and defenses, including viruses, worms, and firewalls.

Daytona Beach Prerequisites: CPSC 225

Prescott Prerequisites: MATH 242 or CPSC 222

Course Offered at: Daytona Beach, Prescott

CPSC 304 Introduction to Computer Forensics 3 Credits (3,0)

Skills for identifying intruder footprints and gathering evidence for prosecution. Overview of methodologies and techniques in computer forensics. Suitable for individuals and organizations interested in tracking and prosecuting cybercriminals.

Course Offered at: Prescott

CPSC 305 Database Systems and Data Mining 3 Credits (3,0)

Database systems and data mining. Theory of database systems; data mining relevance; current data mining efforts. Real-life applications through assignments and projects.

Prescott Prerequisites: CPSC 125 and CPSC 223

Course Offered at: Daytona Beach, Prescott

CPSC 315 Data Structures and Analysis of Algorithms 3 Credits (3,0)

Design, implementation, and analysis of algorithms for searching, sorting, graphs, trees, and disk files.

Daytona Beach Prerequisites: CPSC 222 and CPSC 225

Prescott Prerequisites: SE majors must have C or better in CPSC 125

Prescott Corequisites: CPSC 222

Worldwide Prerequisites: CPSC 222 and CPSC 225

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 317 Files and Database Systems 3 Credits (3,0)

Introduction to file and database systems, theory of database systems, various database models, and the design of a database system. Real-life problems requiring cooperation, problem formulation, and problem-solving skills. A team/group term project may be assigned.

Daytona Beach Prerequisites: CPSC 222 and CPSC 225

Prescott Prerequisites: CPSC 315 (SE majors must have a C or better)

Worldwide Prerequisites: CPSC 222 and CPSC 225

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 325 Programming in ADA 3 Credits (3,0)

Advanced systems concepts using ADA language. Implementation of software engineering, concurrent programming, and structured design techniques.

Prerequisites: CPSC 125 and CPSC 223 (SE majors must have C or better)

Course Offered at: Prescott

CPSC 332 Organization of Programming Languages 3 Credits (3,0)

Comparative study of programming paradigms. Programming in several languages chosen to illustrate the essential features of the paradigms studied. Formal language concepts introduced.

Daytona Beach Prerequisites: CPSC 222 and CPSC 225

Prescott Prerequisites: CPSC 225 (SE majors must have a C or better)

Worldwide Prerequisites: CPSC 222 and CPSC 225

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 335 Introduction to Computer Graphics 3 Credits (3,0)

Computer graphics, algorithms, graphics programming, graphics design, and graphic packages. Applications to aviation, business, and scientific problems. A term project may be assigned.

Daytona Beach Prerequisites: MATH 241

Worldwide Prerequisites: MATH 241

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 344 C Programming and UNIX 3 Credits (3,0)

Advanced C programming and UNIX environment. Operating systems principles, process management, memory management, concurrency, UNIX system programming, and tools.

Prerequisites: CPSC 223

Course Offered at: Daytona Beach

CPSC 350 Computer Modeling and Simulation / Systems Modeling 3 Credits (3,0)

Modeling and simulation topics including statistical models, queuing theory, random variate generation, design and analysis of experiments, and verification and validation of simulation models.

Daytona Beach Prerequisites: ENGR 115 or CPSC 118 or CPSC 223

Course Offered at: Daytona Beach, Prescott

CPSC 362 Computing Theory 3 Credits (3,0)

Theoretical foundations of autonomous computation. Formal languages, grammars, models of computation, computability, and computational complexity. Relationships between languages, grammars, and models of computation. Classification in the Chomsky Hierarchy.

Prerequisites: CPSC 222

Course Offered at: Daytona Beach, Worldwide

CPSC 399 Special Topics in Computer Science 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in computer science.

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 415 Human-Computer Interfaces 3 Credits (3,0)

Usability issues, graphical systems, and interfaces. Focus on human-computer interaction and software design for usability.

Prescott Prerequisites: SE majors must have C or better in CPSC 225

Course Offered at: Daytona Beach, Prescott

CPSC 420 Operating Systems 3 Credits (3,0)

Development, structure, and functions of operating systems. Demand service models; concurrent model development.

Daytona Beach Prerequisites: CPSC 225

Prescott Prerequisites: CE/SE majors must have C or better in (CPSC 125 and CPSC 223) and be in Junior Standing

Worldwide Prerequisites: CPSC 225

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 425 Net-Centric Computing 3 Credits (3,0)

Software and computer science in network-based computation.

Prescott Prerequisites: SE students must have a C or better in CESC 320

Course Offered at: Daytona Beach, Prescott

CPSC 426 Digital Forensics 3 Credits (3,0)

Locating evidence and recovering data using low-level techniques.

Preservation, identification, extraction, documentation, and interpretation of computer data. Analysis of file systems and partition data structures.

Course Offered at: Daytona Beach

CPSC 427 System Exploitation and Penetration Testing 3 Credits (3,0)

Common vulnerabilities and exploitation techniques. Penetration testing methods and strategies to avoid common exploits in system design and implementation phases.

Prerequisites: CPSC 303

Course Offered at: Daytona Beach

CPSC 428 Applied Cryptography 3 Credits (3,0)

Concepts of cryptography for enhancing system security. Common cryptanalysis techniques and tools.

Prerequisites: CPSC 225 or CPSC 222 and STAT 222 or MATH 412

Course Offered at: Daytona Beach

CPSC 429 Current Topics in Cybersecurity 3 Credits (3,0)

Emerging issues in cybersecurity. Content depends on current trends at the time of offering.

Prerequisites: CPSC 303

Course Offered at: Daytona Beach

CPSC 432 Information and Computer Security 3 Credits (3,0)

Overview of information security, including larger context, personnel and operational security, and technical basis and practical difficulties of COMPUSEC itself.

Daytona Beach Prerequisites: CPSC 420

Prescott Prerequisites: SE students must have C or better in CPSC 420

Worldwide Prerequisites: CPSC 420

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 455 Artificial Intelligence 3 Credits (3,0)

Artificial intelligence principles and application to real-world problems.

Addresses tools and techniques including agent-based systems, problem solving algorithms, expert systems, fuzzy logic, feed forward back propagating artificial neural networks, and ethical issues of intelligent systems. Students are exposed to both algorithms and tools (commercial and/or open source).

Daytona Beach Prerequisites: CPSC 225

Prescott Prerequisites: SE/EE/CE majors must have C or better in CPSC 125 and CPSC 223

Worldwide Prerequisites: CPSC 225

Course Offered at: Daytona Beach, Prescott, Worldwide

CPSC 462 Computer Networks 3 Credits (3,0)

Modern computer network analysis and design, implementation of the ISO/OSI model, and current standardized protocols. Network architectural layers above the physical layer.

Prerequisites: CESC 320

Course Offered at: Daytona Beach, Worldwide

CPSC 490 Computer Science Capstone Design I 3 Credits (3,0)

Participate in a two-semester multidisciplinary capstone design course; engage in requirements gathering, team management, analysis, design, implementation, and testing of software/hardware systems; collaborate in teams using defined processes for product development; assess project work with industrial standards and review techniques; emphasize skills for effective participation in engineering development teams in industrial environments.

Prerequisites: SFTW 300

Course Offered at: Daytona Beach

CPSC 491 Computer Science Capstone Design II 3 Credits (3,0)

Participate in a two-semester multidisciplinary capstone design course; engage in requirements gathering, team management, analysis, design, implementation, and testing of software/hardware systems; collaborate in teams using defined processes for product development; assess project work with industrial standards and review techniques; emphasize skills for effective participation in engineering development teams in industrial environments.

Prerequisites: CPSC 490

Course Offered at: Daytona Beach

CPSC 499 Special Topics in Computer Science 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in computer science.

Course Offered at: Daytona Beach, Prescott, Worldwide