

COMPUTER SCIENCE (CPS)

CPS 110 CONQUERING THE DIGITAL DIVIDE 3 Credit

This course takes as its starting point the proposition that technology is central to the modern world as one of the primary tools enabling communication and learning. Students will learn the principles behind computer hardware, software, and networks, learn to use the Internet for computer based researching, peer-to-peer sharing of information, multimedia applications, integrating word processors and spreadsheets, and how collaborative tools function. The ethical implications of computing, such as security, malware, privacy, identity theft and the social implications of information sharing will be given particular consideration.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 120 FUND OF INFORMATION SYSTEMS 3 Credit

Fundamental concepts that surround computer systems and their use in the business, scientific, industrial and educational worlds. Study of hardware and software components and their relation to jobs that will be accomplished by computers. Survey of leading edge concepts, such as Artificial intelligence and robotics; legal aspects of computing; and major application software packages, such as text editors, spreadsheets, database managers, telecommunications packages, and graphics programs. Students will be exposed to the use of operating systems and their utilities and they will be introduced to the process of computer programming.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 140 ESSENTIALS OF SPREADSHEETS 1 Credit

This course will help students develop a basic operational understanding of common spreadsheet systems including: entering text and numbers, printing, formatting of worksheets, formulas, cell addressing, functions, developing charts and graphs, and exploring the what-if analysis.

Grade Mode: Standard Letter

Course Offerings: Hybrid, Lecture, Web Based

Equivalencies: CPS 110

CPS 141 ESSENTIALS OF WORD PROCESSING 1 Credit

This course develops a basic operational understanding of common word processing systems including: formatting paragraphs and characters, use of clip art, printing, error correction, research paper development, proofing and revising a research paper, creating a resume and cover letter, and proper use of common citation styles.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

Equivalencies: CPS 110

CPS 142 ESSENTIALS OF PRESENTATIONS 1 Credit

This course will help students with a basic operational understanding of common presentation tools including: layout procedures, graphics, animations, sounds, designs, animations and transitions.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

Equivalencies: CPS 110

CPS 161 ELEMENTARY PROGRAMMING 3 Credit

An introduction to basic programming tools and processes with an emphasis on fundamental programming tools, processes, and documentational methods. Students will program using standard programming tools and processes. Elementary logical programming structures will be presented.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 165 ADVANCED PROGRAMMING 3 Credit

A second course in programming that will introduce more advanced programming concepts such as arrays and file processing. Students will learn how to do sorting and searching. Introductory analysis of algorithms will be introduced.

Pre-requisite: CPS 161

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 205 SPREADSHEETS 3 Credit

An in-depth look at the basics of spreadsheets (currently Microsoft Excel). Students will explore proper workbook design, professional worksheet development, charting and graphing, creating lists, integrating spreadsheets with other software, application creation, use of multiple worksheets, creation of data tables and scenarios, solving complex business problems, importing data into a spreadsheet, and basic Visual Basic for Applications (VBA) programming techniques.

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 206 SPREADSHEETS FOR BUSINESS 3 Credit

Students have requested a more extended spreadsheet course to take up where CPS 205, Spreadsheets, stops. Business students are more intense users of spreadsheets than other academic users and their need extends beyond the content of CPS 205. In particular, they need to take a variety of business concepts such as amortization schedules, regression, present value of money, and cost functions and convert them into concrete form through the use of spreadsheets.

Grade Mode: Standard Letter

Course Offerings: Hybrid, Lecture, Web Based

CPS 210 NETWORKS & TELECOMMUNICATIONS 3 Credit

Students will gain in-depth experience of networking and telecommunications fundamentals including LANs, MANs, WANs, intranets, the Internet, and the WWW. Data communication and telecommunication concepts, models, standards, and protocols will be studied. Installation, configuration, systems integration and management of infrastructure technologies will be practiced in the laboratory. Topics include: Telecommunication configurations; network and Web applications; distributed systems; wired and wireless architectures, topologies, and protocols; installation, configuration, and operation of bridges, routers, switches, and gateways; network performance tuning; privacy, security, firewalls, reliability; installation and configuration of networks; monitoring and management of networks; and communications standards.

Pre-requisite: CPS 120

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 215 INFORMATION LITERACY 1 Credit

With the increasing amount of information all around us, an awareness of this and technological influences is important to our everyday lives. This course will cover many topics including, but not limited to: filter bubbles, bias in search engines, evaluating the quality of news sources and detecting false news stories, the impact of technology on privacy, your digital footprint, and assessing digital risks and protecting your security and privacy.

Grade Mode: Standard Letter, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

Equivalencies: CPS 110

CPS 250 I.S. THRY, STRAT, ARCH, & PRAC 3 Credit

Students will be exposed to the theory of the Information Systems discipline with the course focusing on the linkage between organizational strategy and networked information technologies to implement a rich variety of business models in the national and global contexts connecting individuals, businesses, governments, and other organizations to each other. The course provides an introduction to e-business strategy and the development and architecture of e-business solutions and their components. Application of these theories to the success of organizations and to the roles of management, users, and IS professionals are presented. Topics presented include: Systems theory and concepts; information systems and organizational system; decision support; quality; level of systems: strategic, tactical, and operational; system components and relationships; information systems strategies and e-business strategies; roles of information and information technology; roles of people using, developing, and managing systems; IS planning and change management; human-computer interface; IS development process; evaluation of system performance; societal and ethical issues related to information systems design and use.

Prerequisite: CPS 120

Pre-requisite: CPS 120

Grade Mode: Standard Letter

Course Offerings: Hybrid, Lecture, Web Based

CPS 270 INTRODUCTION TO PROGRAMMING 3 Credit

This course will serve as an introduction to the current programming environment. The fundamentals of the language will be investigated as well as development and documentation

Pre-requisite: CPS 120

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 276 ROUTERS 3 Credit

Students will learn to implement modern connectivity tools for network infrastructure development. Topics covered include: common networking connectivity tools such as hubs, routers, and switches; examination of which components (hubs, routers, or switches) are appropriate for a particular situation; sub-netting; subnet masking; network segmentation; implementation of tools for network segmentation; implementation of tools for connecting networks to the external world.

Pre-requisite: CPS 120

Grade Mode: Standard Letter, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 280 COMPUTER SECURITY 3 Credit

This course provides an overview the issues involved in systems security and practice. Topics covered include: security protocols, security systems analysis, security features in operating systems, tools and methods for security planning, security risk analysis, security vulnerabilities, tools for discovering vulnerabilities, encryption, and issues brought to the forefront for information managers by modern security problems.

Pre-requisite: CPS 120

Grade Mode: Standard Letter, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 292 SPECIAL TOPICS 1-3 Credit

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 300 SYST ANALYSIS & PROJ MGMT 3 Credit

Students will apply their understanding of structured analysis and design techniques by performing feasibility studies, designing plans for systems implementation, doing systems design documenting and diagramming, and creating data dictionaries and other developmental tools while working in high-performance teams to address issues of project management such as creating staffing plans, assessing skill requirements, addressing behavioral and technical issues in project management, handling the problems change management issues in projects, and using software tools for project planning and monitoring.

Pre-requisite: ENG 117, CPS 120

Restrictions: Enrollment limited to students with a classification of Junior or Senior

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 301 DATABASE SYSTEMS 3 Credit

A course in database design and organization. This course will not only teach design principles, but it will also teach students how both relational and non-relational systems work. Students will learn how to both Data Design Languages and Data Manipulation Languages work. Students will learn how to write database data inquiries.

Pre-requisite: ENG 117, CPS 165

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture

Equivalencies: CPS 201

CPS 310 INFO TECHNOLGY HRDWRE & SFTWRE 3 Credit

Organization and operation of digital computers. Assembly language programming including addressing, looping, logic, and registers. Used as a vehicle for understanding computer architecture.

Pre-requisite: CPS 270, ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 320 COMPUTER FORENSICS 3 Credit

This course is an examination of the tools that security professionals use to protect and preserve the information in an organization. This will include log analysis, malware analysis and reverse engineering, and methods for finding vulnerabilities in software and in systems. Students will work with encryption and decryption tools and methodologies. This course provides a comparative study of information technology, evidence analysis, chain of custody, data retrieval from computer hardware and software applications, and the issue of data remanence. Particular attention will be paid to the ethical considerations involved in the use of the tools presented.

Pre-requisite: CPS 270, ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 325 INFORMATION ASSURANCE 3 Credit

This course is a hands-on examination of the tools that security professionals use to protect the information in an organization. This includes the use of network penetration testing programs, port scanners, and other tools for vulnerability testing. Students will work with tools for encryption and password cracking. Methods for protecting workstations, routers, switches, and servers will be examined. Particular attention will be paid to the ethical considerations involved in the use of the tools presented. Pre-requisite: Consent of Instructor

Pre-requisite: CPS 210, ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 330 OPERATING SYSTEMS THEORY 3 Credit

This course represents an advanced consideration of the issues relating to the design of operating systems. The components of operating systems will be presented. A comparison of major

Pre-requisite: ENG 117, CPS 310

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 370 PROG W/ DATA, FILE & OBJECT 3 Credit

This is a first course in Files and Data Structures and a continuation of CPS 270. Programming with files and data structures will be presented. Analysis of algorithm efficiency, sorting, and searching will be examined. Lists, trees, stacks, and queues, will be discussed.

Pre-requisite: ENG 117, CPS 270

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 376 APPLIED NETWORKING 3 Credit

This is an in depth examination of the issues of implementing a large scale network. Issues addressed include network operating systems, active directory, group policy objects, and network enterprise planning and management.

Pre-requisite: CPS 210, ENG 117

Grade Mode: Standard Letter, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 385 DATA SCRIPTING 3 Credit

An examination of an advanced data scripting language including elements of language syntax, objects, data extraction and formatting, mathematical libraries, and graphics libraries.

Pre-requisite: ENG 117, CPS 270, CPS 301, MTH 252

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 392 SPECIAL TOPICS: 1-6 Credit

Expected to be offered: Sufficient Demand

Pre-requisite: ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 403 PRINCIPLES OF MACHINE LEARNING 3 Credit

Theory and implementation of common supervised and unsupervised learning algorithms: regression and logistic regression using gradient descent for high-dimensional data, clustering, introduction to neural networks and support vector machines. General principles of model improvement and evaluation will be applied throughout: feature creation, principal component analysis, over- vs. under-fitting, and methods of cross validation.

Pre-requisite: CPS 301, ENG 117

Grade Mode: Standard Letter, Audit, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 411 ALGORITHMS 3 Credit

Advanced sorting and searching algorithms, graph theory, recursion, and fundamentals of data structures (lists, queues, and trees). Prerequisite: CPS 385

Pre-requisite: ENG 117, CPS 385

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 415 PROGRAMMING LANGUAGES 3 Credit

An overview of the theory and structure of computer programming languages focusing on the characteristics and applicability of different classes of programming languages. Offered on an as needed basis.

Pre-requisite: ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 445 NETWORK INTEGRATION 3 Credit

This course is a comparative examination of different network operating systems and how they can be integrated together for overall network connectivity. Topic covered include: use and connection of computer systems using multiple common network operating systems and the implications of connecting multiple common network operating systems.

Pre-requisite: ENG 117

Grade Mode: Standard Letter, Pass/Fail

Course Offerings: Hybrid, Lecture, Web Based

CPS 450 ADVANCED NETWORKING 3 Credit

Advanced look at local area networks. Emphasis on the use, planning, and implementation of Local Area Networks (LAN). Students will gain an advanced knowledge of LAN hardware and software. Emphasis will be placed on LAN architecture and performance considerations.

Pre-requisite: ENG 117, CPS 120

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based

CPS 495 INTERNSHIP 1-15 Credit

This course provides the opportunity to apply the theories or see how the theories are applied that you have learned about throughout your academic career. A minimum of 60 hours per credit will be spent observing and/or working within an organization. Pre-requisite: Consent of Instructor Expected to be offered: Sufficient demand

Pre-requisite: ENG 117

Grade Mode: Other to Include Option of IP, Audit, Pass/Fail, Transfer

Course Offerings: Internship, IN/FE/Rsrch/Thsis/Prjct/Capstn

CPS 498 PHYS DESIGN IN EMERGING ENVIRO 3 Credit

Students who have completed the analysis and logical design course will extend their knowledge by implementing an information system in an emerging systems environment. Teams will use project management principles to implement an information system. Students will use their project management skills to produce implementation and design documents. Students are encouraged to seek design and implementation experiences outside the university.

Pre-requisite: ENG 117

Grade Mode: Standard Letter, Audit, Pass/Fail, Transfer

Course Offerings: Hybrid, Lecture, Web Based