5. Computer and Information Sciences – 0301-0399

This subject area encompasses courses that concern computer technology, computer programming, and the electronic manipulation, processing, and transmission of data.

0301 Basic Computer - Courses introduce the computer and peripheral devices, the functions and uses of computers, the language of the computer industry, possible applications, and occupations related to computer hardware and software. Legal and ethical issues may be explored, as well as the effect of the computer on modern society. Performance of some computer operations may be required.

0302 General Computer Applications - Designed for students with an interest in exploring the uses of the personal computer, General Computer Applications courses provide experience in the proper use of previously written software packages. A wide range of applications is explored, including (but not limited to) word processing, spreadsheet, graphics, and database programs. Electronic mail and desktop publishing may also be included. Exercises and problems may be from any field, or may be defined by the student(s).

0303 Business Computer Applications - Designed for students with an interest in business/office occupations, Business Computer Applications courses provide experience in the proper use of previously written software packages. Generally, a wide range of applications is explored, including (but not limited to) word processing, spreadsheet, graphics, and database programs. More advanced topics (such as electronic mail, desktop publishing, and telecommunications) may also be included. Exercises and problems are specifically business related.

0304 Computer Applications II – Grades 10-12 – In Computer Applications II, the emphasis is on the mastery of advanced computer usage techniques for post high school education and career enhancement. Topics include: language scripting, advanced telecommunications with national and international access, the consolidation of word processing, database and spreadsheet skills into report production, advanced computer graphic manipulation, desktop integration for industry publication, beginning multi-platform network information management, and multimedia presentations.

0305 Desktop Publishing I – Grades 9-12 – In Desktop Publishing I, the student acquires skills in desktop publishing and applies design and layout principles to a variety of publications and uses them to develop creative and artistic projects (e.g., calendars, course offering handbooks, newsletters)

0306 Desktop Publishing II – Grades 10-12 – In Desktop Publishing II, the student continues to build on his/her technical design skills developed in Desktop Publishing I. The student produces professional high-quality page design for business publications (e.g., newsletters, flyers, brochures, business cards) using page layout tools for print and the Web.

0307 Computer Graphics II – Grades 10-12 – In Computer Graphics II, the student learns a new medium with which to create art. The student learns the basics of visual design elements and principles, learns to use the computer as a visual design medium, and develops skill,

confidence, and sensitivity in applying knowledge of art media and techniques to the production of art work. The student receives training in an industry standard bitmap graphics program (e.g., Adobe PhotoShop) in addition to a vector- based (e.g., Illustrator, AppleWorks, FreeHand) graphics program. The production of computer art is applied to various other content areas and acquired skills are related to careers in art and other fields that now require computer graphics capabilities. Areas of study are visual design, conventions and history, technical literacy, visual communication, career awareness, and preparation of work for public display.

0308 Computer Graphics III – Grades 11-12 – Computer Graphics III offers the student an opportunity to further study computer graphics applications with emphasis on mastery of advanced technical skills and concepts. The student continues to apply visual design elements and principles, to use the computer as a visual design medium, and to gain proficiency, confidence, and sensitivity in applying advanced knowledge of art media and techniques to the creation of graphic products. Advanced skills are learned through a variety of applications. Areas of study are visual design, conventions and history, technical literacy, visual communication, career awareness, and preparation of work for public display. Emphasis is placed on creating an individualized body of work that represents a personal exploration of viewpoints.

0309 Computer Graphics IV – Grade 12 – Computer Graphics IV offers the student an opportunity to demonstrate a high level of competency in graphics applications with an emphasis on professional portfolio development. The student develops an individual style through a variety of graphic applications. Areas of study are visual design, conventions and history, technical literacy, visual communication, career awareness, and preparation of work for public display. Emphasis is placed on creating an individualized body of work that represents a personal exploration of viewpoints.

0313 Business Programming - Courses provide students with experience in using previously written software packages as well as designing and writing programs of their own. With a focus on business application, the word processing, spreadsheet, graphics, and database exercises contain a business industry focus, and the original programs are written in languages typical of the business industry (BASIC, COBOL, and/or RPL).

0314 Data Systems/Processing - Courses introduce students to the uses and operation of computer hardware and software and to the programming languages used in business applications. Students typically use BASIC, COBOL, and/or RPL languages as they write flowcharts or computer programs. Data processing skills may also be a component of Data Systems/Processing courses.

0315 Computer Graphics - Courses provide students with the opportunity to explore the capability of the computer to produce visual imagery and to apply graphic techniques to various fields, such as advertising, TV/video, and architecture. Modeling, simulation, animation, and image retouching are possible course topics.

0316 Computing Systems - Courses offer a broad exploration of the use of computers in a variety of fields. Course content may have a considerable range, but typically includes; the introduction of robotics and control systems, computer assisted design, computer aided

manufacturing systems, and other computer technologies as they relate to industry applications.

0317 Computer Technology - Courses introduce students to the features, functions, and design of computer hardware, and provide instruction in the maintenance and repair of computer components and peripheral devices.

0318 Network Technology - Courses introduce students to the technology involved in the transmission of data between and among computers through data lines, telephone lines, or other transmission media (such as hard wiring, cable television networks, radio waves, and so on). The course may emphasize the capabilities of networks, network technology itself, or both. Content topics emphasizing network capabilities include electronic mail, public networks and electronic bulletin boards; topics emphasizing the technology include network software, hardware, and peripherals involved in setting up and maintaining a computer network.

0319 Computer Networking II – Grades 11-12 – In Computer Networking II the student works more independently and continues to split his/her time between the classroom and in the field, working on the school's local network and supporting Level I students. The student works on a live network as he/she is exposed to the many components of network management. The course is designed to train the student in the implementation of network management tools that support such network issues as security, ethics, software, hardware, and business. The student becomes familiar with:
  • Software – Microsoft, Symantec, LAN Guard, 3Com, Adobe and more

  • Hardware – At the systems and component level, Server versus Client

  • Network systems – Hardware, Software, and Management Tools

  • Network Topology, Protocols and Standards

  • The Business Side of Network Management (This includes development of a Business Plan.)

  • Methods of Quality Control & Tools

0320 Computer Technology Assistant I – Grades 9-12 – In Computer Technology Assistant I, the student becomes familiar with hardware and software onsite and is able to perform some preventive maintenance on the equipment. The student is introduced to computer operations and expands the depth and breadth of his/her knowledge and abilities by demonstrating objectives on a higher level of ability and on different types of equipment. The student installs software, creates and maintains web pages, and helps maintain the local area network. Literacy is integrated throughout the curriculum.

0321 Computer Technology Assistant II – Grades 10-12 – In Computer Technology Assistant II the student increases his/her expertise with hardware and software onsite and performs some preventative maintenance on the equipment. The student applies knowledge of computer operations and expands the depth and breadth of his/her knowledge and abilities by demonstrating objectives on a higher level of ability and on different types of equipment. The

student installs software, creates and maintains web pages, and helps maintain the local area network. The student spends an increased amount of time problem solving and trouble-shooting. Literacy is integrated throughout the curriculum.

0322 Computer Technology Assistant III – Grades 11-12 – In Computer Technology Assistant III, the student works independently with hardware and software onsite, performs and analyses some preventive maintenance on the equipment, and implements new ideas and/or product to benefit the school technological environment. The student applies knowledge of computer operations and expands the depth and breadth of his/her knowledge and abilities by demonstrating objectives on a higher level of ability and on different types of equipment. The student installs software, creates and maintains web pages, and helps maintain the local area network. The Level III computer technology assistant provides mentorship and leadership to the school community. Literacy is integrated throughout the curriculum.

0323 Computer Science/Programming - Courses provide the background knowledge and skills to construct computer programs in one or more languages. Computer coding and program structure are often introduced with the BASIC language, but other computer languages such as Pascal or COBOL may be used instead. Initially, students learn to structure, create, document, and debug computer programs. In advanced courses, more emphasis is placed on design, skills to relevant applications such as modeling, data management, graphics, and text processing.

0324 BASIC Programming - Courses provide the opportunity to gain expertise in computer programs using the BASIC language. A general computer programming courses with the emphasis on how to structure and document computer programs, and how to use problem solving techniques. As students advance, they learn to capitalize on the features and strengths of the BASIC language (loops, subscripted variables, and sequential and random access data files) and to place more emphasis on clarity and efficiency.

0325 Pascal Programming - Courses provide the opportunity to gain expertise in computer programs using the Pascal language. Emphasis is on how to structure and document computer programs, and how to use problem solving techniques. However, as students advance, they learn to capitalize on the features and strengths of Pascal (top down design, procedures, and loops) and to place greater emphasis on design and efficiency.

0326 Computer Programming - Other Language -Courses provide the opportunity to gain expertise in computer programs using languages other than BASIC and Pascal, such as FORTRAN, COBOL, C, and so on. Emphasis is on how to structure and document computer programs, and how to use problem solving techniques. As students advance, they learn to capitalize on the features and strengths of the language being used.

0327 AP Computer Science A - Course emphasizes programming methodology and procedural abstraction. It includes the study of algorithms, data structures, and data abstraction, but these topics are not covered to the extent that they are covered in Computer Science AB. The content of Computer Science A is a subset of the content of computer Science AB. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.

0328 IB Computer Studies - Courses prepare students to take the International Baccalaureate Computing Studies exam at either the Subsidiary or Higher level. Usually a two year study, the courses emphasize problem analysis, efficient use of data structures and manipulation procedures, and logical decision-making. The IB Computing Studies course content also covers the applications and effects of the computer on modern society as well as the limitations of computer technology.

0329 AP Computer Science AB - Course includes all the topics of Computer Science A, as well as a more formal and in-depth study of algorithms, data structures, and data abstraction. For example, binary trees are studied in computer Science AB but not in Computer Science A. This course is intended to prepare students for the optional Advanced Placement Exam in this subject and should follow the published College Board guidelines.

0330 Database Design and Programming - Oracle Academy - Recommended for Students Grades 9 - 12 - Students analyze case studies to identify patterns and connections between information not obviously related and to develop solutions to make a business effective. The program teaches inductive reasoning to solve problems and think conceptually, systematically, and critically by transforming business requirements into an operational database, creating and implementing database design, managing a business project, and preparing for SQL Certification exam. Students become proficient business analysts, technical experts in structured query language (SQL), and develop essential "professional skills" including teamwork, project management, presentation, and interviewing techniques.

0331 Database Programming with SQL – Oracle Academy Grades 9 - 12- This is the second portion of the Database Design and Programming with SQL course. In this portion, students implement their database design by creating a physical database using SQL, the industry-standard database programming language. Upon completion of this course, students have the opportunity to sit for the first of two exams required to earn the Oracle Certified Associate.

0340 IT Essentials: PC Hardware and Software- Cisco Academy Grades 9 - 12 - An introduction to computer components, laptops and portable devices, wireless connectivity, security, safety, environmental concerns and diagnostic tools.

0341 CCNA Discovery - Cisco Academy Grades 9 – 12 - A foundational curriculum that offers a hands-on approach to learning, using interactive tools and easy-to-follow labs to help students learn the general theory needed to build networks.

0342 CCNA Exploration - Cisco Academy Grades 9 - 12 - A comprehensive overview of networking; from fundamentals to advanced applications, based on a top-down approach to learning that emphasizes theoretical concepts and practical application.

0343 CCNP v5.0- Cisco Academy = Grades 9 – 12 - An advanced overview of complex network configurations, diagnostic tools, and troubleshooting processes.

0395 Computer and Information Sciences - Related Subjects - Courses in this category offer instruction in related topics that are necessary or helpful in occupations involving computer and computer related technologies; such topics may include mathematics, science, and/or technical reading.

0396 Computer and Information Sciences-Independent Study - Courses often conducted with instructors as mentors, enable students to explore computer related topics of interest in greater depth and detail. Independent Study courses may serve as an opportunity to expand expertise in a particular programming language, explore a topic of special interest within the computer industry, or develop skill in a specific computer application.

0397 Computer and Information Sciences Work Site Experiences - Cooperative Education - OJT - Recommended for Students Grades - Through these courses, work experience is gained within either the computer or information sciences fields. Goals will be set cooperatively by the student, teacher, and employer: classroom attendance, related classroom training experience, and related course work are an integral part of the Computer and Information Sciences

0399 Computer and Information Sciences - Other