ICT INFORMATION AND COMMUNICATION TECHNOLOGY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT.110</td>
<td>Computer Software Applications</td>
<td>3</td>
<td>3</td>
<td>This course in software applications will provide students with an overview of a computer operating system and commonly used computer software. Students will gain experience with word processing and database management tasks, presentation software, and spreadsheets. Additional software programs associated with the Windows environment will be explored. This course may be used to satisfy the computer requirement common for students planning to transfer to a four-year college or university. Offered: Fall or Spring or Summer Prerequisites: Take AOP.101 or BOC.107 Applicable toward graduation at Sandburg where program structure permits: Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1). General Education – Not Applicable Elective Only</td>
</tr>
<tr>
<td>ICT.115</td>
<td>Website Support</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ICT.120</td>
<td>Computer Information Systems</td>
<td>3</td>
<td>3</td>
<td>This course is an overview of computer information systems. It is designed for the student majoring in computer information systems or various business curricula. The course may be used to fulfill the introductory course requirement in the Computer Information Systems Specialist A.A.S. degree or to meet the introductory computing course requirements for business majors at four-year colleges or universities. Computer concepts, terminology, hardware, software, operating systems, networks and career preparation topics are surveyed and discussed. Offered: Fall or as Needed Applicable toward graduation at Sandburg where program structure permits: Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1). General Education – Not Applicable Elective Only</td>
</tr>
<tr>
<td>ICT.131</td>
<td>Fundamentals of Programming</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ICT.135</td>
<td>Mobile Technologies</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ICT.160</td>
<td>Introduction to Internetworking</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Title</td>
<td>Credits</td>
<td>Prerequisites</td>
<td>Offered</td>
</tr>
<tr>
<td>-------------</td>
<td>-------</td>
<td>---------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>ICT.165</td>
<td>Linux 1</td>
<td>2 2 3</td>
<td></td>
<td>Fall</td>
</tr>
<tr>
<td>ICT.170</td>
<td>Hardware Installation &amp; Maintenance</td>
<td>2 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT.181</td>
<td>Windows Networking &amp; Operating Systems</td>
<td>2 2 3</td>
<td></td>
<td>Fall</td>
</tr>
<tr>
<td>ICT.183</td>
<td>Implement Ms Network Infrastructure</td>
<td>2 2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT.184</td>
<td>Managing Ms Windows Network Servers</td>
<td>2 2 3</td>
<td></td>
<td>As Needed</td>
</tr>
<tr>
<td>ICT.205</td>
<td>Visual Basic Programming</td>
<td>2 2 3</td>
<td></td>
<td>As Needed</td>
</tr>
<tr>
<td>ICT.210</td>
<td>Advanced Microcomputer Software Applicat</td>
<td>2 2 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ICT.212 Microcomputer Spreadsheet App2 2 2 3

In this course students will apply the concepts learned in BOC 112 to realistic business problems. Advanced spreadsheet concepts will be covered, including formatting techniques, templates, functions, lists, filters, analysis tools, workgroups, and the process for importing and exporting data.
Offered: As Needed
Prerequisites: Take BOC.112
Applicable toward graduation at Sandburg where program structure permits: Degrees and Certifications: AAS, AGS, and Certificates where applicable. (1.2).
General Education – Not Applicable

ICT.214 Microcomputer Database Applications 2 2 2 3

This course is a continuation of BOC 114. Students will explore the database operations needed to create and update files; order and search files; generate reports and labels; use memory variables for more complex data manipulation; and produce custom input and output forms.
Offered: As Needed
Prerequisites: Take BOC.114
Applicable toward graduation at Sandburg where program structure permits: Degree and Certificate: AAS, AGS, and Certificates where applicable. (1.2).
General Education – Not Applicable

ICT.220 Digital Forensic & Ethical Principle 2 2 3

This course covers the fundamental concepts of examining, investigating, retrieving, analyzing, and presenting digital evidence as it relates to both civil and criminal investigations. Participants will learn how to use various forensic tools to retrieve digital evidence from a crime scene, analyze data, and present the evidence to comply with the legal process in an ethical manner. IAI Course No.: Offered: Spring Prerequisites: ICT 181
Offered: Spring
Prerequisites: Take ICT.181;
Applicable toward graduation at CSC where program structure permits: Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable General Education: Not Applicable, Elective Only
Offered: Spring
Prerequisites: Take ICT.181;
Applicable toward graduation at Sandburg where program structure permits: Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1).
General Education – Not Applicable Elective Only

ICT.226 Sql Database Application 3 2 4

This course is designed to teach the use of Structured Query Language (SQL) to construct, modify and maintain relational databases. Emphasis is on SQL and its uses in business applications. Hierarchical, network and relational models are covered. Additional topics include data redundancy, data independence, security and data integrity.
Offered: Spring
Prerequisites: Take ICT.120
Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1).
General Education – Not Applicable Elective Only

ICT.251 Ethical Hacking & Networking Defense 3 3

Hands-on Ethical Hacking and Network Defense introduces the art of ethical hacking and security testing and prepares students to be efficient security professionals. This course covers the tools and techniques that ethical hackers and security testers use to discover vulnerabilities and offers solutions to protect computer networks. In addition to learning fundamental security testing concepts, students gain practical knowledge in computer programming in documentation of security tests and in ethical and legal ramifications and discover that critical thinking skills and creativity are essential in security testing.
Offered: Spring
Prerequisites: Take ICT.181
Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AA, AAS, AGS, and Certificates where applicable
General Education: Not Applicable, Elective Only IAI Course No.: Offered: Spring Prerequisite: ICT 181 (1.1).
General Education – Not Applicable

ICT.255 Security + Fundamentals 2 2 3

In this course, we will take an in-depth look at network security concepts and techniques, including basic security principles, establishing security baselines, and the most recent attach and defense techniques and technologies. We will learn how to harden a network to resist attacks, protect basic and advanced communications, and use cryptography and Public Key Infrastructure (PKI) to thwart attacks. We will also discuss establishing security policies and procedures and managing security efforts to prepare students.
Offered: Fall
Prerequisites: Take ICT.181
Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AAS, AGS, and Certificates were applicable. (1.2).
General Education – Not Applicable

ICT.260 Introduction to Internetwork Operating S 2 2 3

This is the second of four courses providing students with classroom and laboratory experience in current and emerging networking technology that will provide them with entry-level skills in computer networking. Course content includes, but is not limited to, safety practices, networking terminology and protocols, network standards, working with LANs and WANs, additional discussion of the OSI model, discussion of Ethernet, token ring, Fiber Distributed Data Interface, TCP/IP addressing protocol, dynamic routing, and the network administrator's role and function. Emphasis is given to the use of decision-making and problem-solving techniques in applying scientific mathematical, communication and social studies skills and concepts to solve networking problems. Instruction and training are also provided in the proper care, maintenance and use of networking software, tools, and equipment as well as the consideration of local state and federal safety, building and environmental codes and regulations.
Offered: Fall
Prerequisites: Take ICT.160
Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AAS, AGS, and Certificates where applicable (1.2).
General Education – Not Applicable
ICT.261 Introduction to Local Area Networks 2 2 3

This is the third of four semester courses designed to provide students with classroom and laboratory experience in current and emerging networking technology that will empower them to enter employment and/or further education and training in the computer networking field. Instruction includes, but is not limited to, safety, networking, network terminology and protocols, LAN segmentation, IPX addressing, and Fast Ethernet standards. Particular emphasis is given to the use of IPX access lists, full and half duplex Interior Gateway Routing Protocol and Virtual Local Area Networks. Application toward graduation at Sandburg where program structure permits: Degree or Certificate: AAS, AGS, and Certificates where applicable. (1.2).

General Education – Not Applicable

ICT.262 Introduction to Wide Area Networks 2 2 3

This is the fourth of four courses designed to provide students with classroom and laboratory experience in current and emerging networking technology that will empower them to enter employment and/or further education and training in the computer networking field. Instruction includes, but is not limited to, Network Connectivity including WAN terminology and protocols, WAN services such as frame relay, and high-level data link control, ATM, Ethernet WAN, MPLS, VSAT, point to point protocol, and PPPoE. Emphasis will also be given to the use of VPNs, GRE, eBGP, IPv4 and IPv6 Access Control Lists and Network Security and Monitoring. Students will also explore QoS Mechanisms, Network Evolution to the Internet of Things including Cloud and Virtualization and Network Programming.

Offered: Fall

Prerequisites: Take ICT.261

Applicable toward graduation at Sandburg where program structure permits:

Degree or Certificate: AAS, AGS, and Certificates where applicable (1.2).

General Education – Not Applicable

ICT.265 Linux 2 2 3

This course is the second course in the Linux series. This course aligns to both the LPIC Level 1 certification and CompTIA Linux+ certification. Students will be prepared to be Linux administrators, managing, configuring and securing the Linux operating system and network. Application toward graduation at Sandburg where program structure permits: Degree or Certificate: AAS, AGS and Certificate where applicable. (1.2).

General Education – Not Applicable

ICT.276 Virtualization 2 2 3

This hands-on training course explores installation, configuration, and management of a virtualized networking environment. Latest virtualization technologies and software will be used and will align to the current entry-level certification exam.

Offered: Spring

Prerequisites: Take ICT.183

Applicable toward graduation at Sandburg where program structure permits:

Degree or Certificate: AA, AS, AAS, AGS and Certificates where applicable (1.1).

General Education – Not Applicable Elective Only

ICT.278 IoT Fundamentals 2 2 3

Cisco Networking Academy’s IoT Fundamentals curriculum provides students with a comprehensive understanding of the Internet of Things (IoT). It develops foundational skills using hands-on lab activities that stimulate the students in applying creative problem-solving and rapid prototyping in the interdisciplinary domain of electronics, networking, security, data analytics and business. The student-centric approach translates into the student being able to ideate, design, prototype and present an IoT solution for an identified business or society need. Using this interdisciplinary approach, the IoT Fundamentals curriculum aims to equip students with a Global Problem Solver mindset and skillset, and to fuel their imagination through a deeper understanding of the transformative impact IoT, Big Data, and analytics technologies are having on business and our ability to solve social issues.

Offered: Spring

Applicable toward graduation at Sandburg where program structure permits:

Degree or Certificate: AAS, AGS and Certificates where applicable (1.2).

General Education – Not Applicable Elective Only

ICT.280 Cybersecurity Operations 2 2 3

Cybersecurity Operations (Cyber Ops) introduces the core security concepts and skills needed to monitor, detect, analyze and respond to cybercrime, cyberespionage, insider threats, advanced persistent threats, regulatory requirements, and other cybersecurity issues facing organizations. It emphasizes the practical application of the skills needed to maintain and ensure security operational readiness of secure networked systems.

Offered: Spring

Prerequisites: Take ICT.160, ICT.165, ICT.181

Applicable toward graduation at Sandburg where program structure permits:

Degree or Certificate: AAS, AGS and Certificates where applicable (1.2).

General Education – Not Applicable Elective Only

ICT.282 Cloud Security 2 2 3

This course covers fundamental concepts of the field of Cloud Computing, cloud security, addressing known risks and vulnerabilities and focuses on sound architectural design for secure cloud environment. The course directed at four major areas: cloud infrastructures, cloud security, cloud platforms, and cloud management. Students will gain hands-on experience through projects utilizing public cloud infrastructures.

Offered: Spring

Applicable toward graduation at Sandburg where program structure permits:

Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1).

General Education – Not Applicable Elective Only
ICT.284  IT Risk Management Policy & Compliance  2  2  3

The course explores concepts of information technology risk management strategies in security perspectives. It will teach students both qualitative and quantitative risk assessment methodologies to identify, mitigate, and manage IT risks. In addition, students will learn about compliance with IT risk management policies and procedures. The course also emphasizes the needs of Contingency Planning, Incident Response, Disaster Recovery and Business Continuity planning.

Offered: Spring

Prerequisites: Take ICT.255

Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AA, AS, AAS, AGS, and Certificates where applicable (1.1).
General Education – Not Applicable Elective Only

ICT.296  Internship  15  3

This course is a planned and supervised occupational work experience at selected work sites using microcomputer systems. Job tasks are organized to include those of a beginning, intermediate and advanced nature so as to provide exposure to the total operation of a microcomputer-based data processing/information system.

Offered: Spring or Summer

Applicable toward graduation at Sandburg where program structure permits:
Degree or Certificate: AAS, AGS and Certificates where applicable (1.2).
General Education – Not Applicable