NORTH CAROLINA COMMUNITY COLLEGE SYSTEM
Dr. R. Scott Ralls, President

March 10, 2011

To: Presidents
             Chief Academic Officers

From: Sharon E. Morrissey, Ed. D.
             Senior Vice President and Chief Academic Officer

Subject: Curriculum Review Committee Course Approvals

The Curriculum Review Committee (CRC) has the responsibility for maintaining the curriculum courses in the Combined Course Library (CCL). The approved course requests from the Spring 2011 meeting are attached for your information.

The State Board of Community Colleges has delegated authority to the Senior Vice President and Chief Academic Officer to approve curriculum standard changes involving **core course title and/or credit hour changes** resulting from CRC action. The standards listed below have been revised as a result of such CRC-approved changes to one or more core courses:

> Advertising and Graphic Design (A30100)
> Associate in Arts/Art Education (A1010A)
> Associate in Fine Arts/Art (A1020A)
> Scientific Graphics Technology (A40360)

The CRC also approved requests to revise the **course description, prerequisite(s), corequisite(s), and/or class/lab hours** of core courses found on the curriculum standard(s) listed below. Please note that the only change indicated on the printed standard will be the inclusion of the statement *CRC Revised-Electronic Only 02/10/11,* since only the electronic version of the standard template will be revised:

> Cancer Information Management (A45130)
> Computer Information Technology (A25260)
> Computer Programming   (A25130)
> High Performance Computing (A25230)
> Information Systems Security (A25270)
> Information Systems Security/Operating Systems (A2527A)
> Information Systems Security/Security Hardware (A2527B)
> Medical Dosimetry (Diploma) (D45450)
> Networking Technology (A25340)
> Simulation and Game Development (A25450)

The revised standards noted above are attached for your convenience.

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E-mail

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A few of the course revisions involved the removal of required prerequisites or corequisites. Please note that colleges may add local prerequisites and/or corequisites if they determine a need exists.

Please be aware that you must implement the attached revised courses and standards no later than one year after the effective term. You must update your college's electronic program of study and receive approval from the System Office prior to implementation of the revised courses and program.

Curriculum standards, curriculum courses and procedures for submitting requests to the CRC are available on the Academic Programs home page at:

> http://www.nccommunitycolleges.edu/programs

If you need assistance or clarification, please contact Ms. Jennifer Frazelle, Program Director, at frazellej@nccommunitycolleges.edu or at (919) 807-7120.

SEM/kdp
Attachments
C: Curriculum Review Committee
    Dr. John Pettitt
    Mr. Van Wilson
    Ms. Jennifer Frazelle
    Program Coordinators

New and Revised Curriculum Courses
Approved By the Curriculum Review Committee (CRC)
on February 10, 2011

Course	Title	CRC Action	Effective Semester	Curriculum Standard Core Course
ART-121	Design I	Change title to "Two-Dimensional Design"	Spring 2012	A40360-Scientific Graphics Technology; A30100-Advertising and Graphic Design; A1010A-AA/Art Education; A1020A-AFA/Art
ART-122	Design II	Change title to "Three-Dimensional Design"; Change prerequisite from "ART-121" to "None"	Spring 2012	A40360-Scientific Graphics Technology; A1010A-AA/Art Education; A1020A-AFA/Art
AUC-285	Auto Custom Design Proj	New CCL Course	Summer 2011	N/A
CIM 211	Abstract Prin & Prac I	Change corequisite from "CIM-150" to "None"	Spring 2012	A45130-Cancer Information Management
DME-215	Adv Graphic Design Tools	New CCL Course	Summer 2011	N/A
DOS 230	Clinical Research Exper	Change prerequisites from "DOS-221,DOS-243, and DOS-250" to "None"; Change corequisite from "DOS-260" to "None"	Spring 2012	D45450 -Medical Dosimetry
NOS-120	Linux/UNIX Single User	Change prerequisite from "NOS-110" to "NOS-110 or CET-211"	Spring 2012	A25130-Computer Programming; A25230-High Performance Computing; A25270-Information Systems Security; A2527A-Information Systems Security/Operating Systems; A2527B-Information Systems Security/Security Hardware; A25340-Networking Technology
NOS-130	Windows Single User	Change prerequisite from "NOS-110" to "NOS-110 or CET-211"	Spring 2012	A25130-Computer Programming; A25260-Computer Information Technology; A25270-Information Systems Security; A2527A-Information Systems Security/Operating Systems; A2527B-Information Systems Security/Security Hardware; A25340-Networking Technology
SGD-213	SGD Programming II	Change prerequisite from "SGD-113" to "SGD-113, CSC-134, CSC-151 or CSC-153"	Spring 2012	A25450 -Simulation and Game Development
WEB-125	Mobile Web Design	New CCL Course	Summer 2011	N/A
WEB-187	Wireless/Internet Prog	Change title to "Prog for Mobile Devices"; Change course description	Spring 2012	N/A

CURRICULUM STANDARD

Curriculum Program Title **Advertising and Graphic Design**   Code   **A30100**

Concentration   **(not applicable)**

Curriculum Description

The Advertising and Graphic Design curriculum is designed to provide students with knowledge and skills necessary for employment in the graphic design profession which emphasizes design, advertising, illustration, and digital and multimedia preparation of printed and electronic promotional materials.

Students will be trained in the development of concept and design for promotional materials such as newspaper and magazine advertisements, posters, folders, letterheads, corporate symbols, brochures, booklets, preparation of art for printing, lettering and typography, photography, and electronic media.

Graduates should qualify for employment opportunities with graphic design studios, advertising agencies, printing companies, department stores, a wide variety of manufacturing industries, newspapers, and businesses with in-house graphics operations.

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*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204 (3)]

A.   Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B.   Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C.   Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Advertising and Graphic Design A30100			
	AAS	**Diploma**	**Certificate**
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**26-30 SHC**	**NR**	
Required Courses:			
GRD 110 Typography I 3 SHC			
GRD 280 Portfolio Design 4 SHC			
Required Subject Areas:			
Graphic Design. Select 11-12 SHC:			
ART 121 Two-Dimensional Design 3 SHC			
DES 135 Principles and Elements of Design I 4 SHC			
DES 136 Principles and Elements of Design II 4 SHC			
GRD 141 Graphic Design I 4 SHC			
GRD 142 Graphic Design II 4 SHC			
GRD 241 Graphic Design III 4 SHC			
Drawing. Select one:			
ART 131 Drawing I 3 SHC			
DES 125 Graphic Presentations I 2 SHC			
GRD 121 Drawing Fundamentals I 2 SHC			
Illustration. Select one:			
GRD 131 Illustration I 2 SHC			
GRD 230 Technical Illustration 2 SHC			
Computer Design/Computer Graphics. Select One Set:			
GRD 151 Computer Design Basics 3 SHC &			
GRD 152 Computer Design Techniques I 3 SHC			
or			
GRA 151 Computer Graphics I 2 SHC &			
GRA 152 Computer Graphics II 2 SHC			
Continued on next page			

Advertising and Graphic Design A30100 (Continued)			
B. **CONCENTRATION** *(Not applicable)*			
C. **OTHER MAJOR HOURS** *To be selected from the following prefixes:* ART, BUS, CET, CIS, COE, CSC, CTS, DBA, DES, GRA, GRD, ITN, MKT, NET, NOS, OST, PHO, PRN, SGD, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

Art Education (A1010A)
Associate in Arts Pre-Major

Under the Comprehensive Articulation Agreement and the Independent Comprehensive Articulation Agreement, this template has been developed by university and community college faculty as a blueprint for guiding community colleges in developing programs for students who intend to major in Art Education. Students who successfully complete this course of study and who meet the requirements for admission to the university are eligible to apply for admission to the major with junior standing.

All colleges will not offer all pre-major programs, and course selections may vary. Check college catalogs for course and program offerings.

General Education Core (44 SHC)* Forty-four semester hours of credit in general education core courses are required as outlined on the NCCCS Curriculum Standards for Associate in Arts degree programs. The general education core includes study in the areas of humanities and fine arts, social and behavioral sciences, natural sciences and mathematics, and English composition.

English Composition (6 SHC) *Two English composition courses are required.*
- English 111, Expository Writing, is required as the first composition course.
- The second composition course must be selected from the following:
     ENG 112 Argument-Based Research (3 SHC)
     ENG 113 Literature-Based Research (3 SHC)
     ENG 114 Professional Research and Reporting (3 SHC)

Humanities/Fine Arts (12 SHC**) *Four courses from three discipline areas are required.*
- One course must be a literature course.
- The following courses are required (6 SHC):
     ART 114 Art History Survey I (3 SHC)
     ART 115 Art History Survey II (3 SHC)
- One additional course from the following discipline areas is required: dance, drama, foreign languages, interdisciplinary humanities, music, philosophy, and religion.

Social/Behavioral Sciences (12 SHC) *Four courses from three discipline areas are required.*
- One course must be a history course.
- Three additional courses from the following discipline areas are required: anthropology, economics, geography, history, political science, psychology, and sociology.

Natural Sciences/Mathematics (14 SHC)
     Natural Sciences (8 SHC): Two courses from the biological and physical science disciplines, including accompanying laboratory work, are required.

     Mathematics (6 SHC): Two courses are required.
- One course must be in introductory mathematics (college algebra, trigonometry, calculus, etc.).
- The second course may be a higher level mathematics course or may be selected from among other quantitative subjects, such as computer science (CIS) and statistics (MAT).

A college may award a diploma under the A1010A for completion of the entire general education core, as outlined, with a grade of "C" or better in each course.

Other Required Hours (20-21 SHC)* One semester hour of credit may be included in a sixty-five semester hour credit associate in arts program. The transfer of the 65th hour is not guaranteed.

- The following courses are required (9 SHC):
  - ART 121 Two-Dimensional Design (3 SHC)
  - ART 122 Three-Dimensional Design (3 SHC)
  - ART 131 Drawing I (3 SHC)
- 11 additional hours of approved college transfer courses are required.
  - To satisfy this requirement, two of the following courses are recommended:
  - ART 116 Survey of Amer Art (3 SHC) *or* ART 117 Non-West Art History (3 SHC)
  - ART 132 Drawing II (3 SHC)
  - ART 171 Computer Art I (3 SHC)
  - ART 231 Printmaking I (3 SHC)
  - ART 240 Painting I (3 SHC)
  - ART 247 Jewelry I (3 SHC) *or* ART 245 Metals I (3 SHC)
  - ART 251 Weaving I (3 SHC) *or* ART 250 Surface Design: Textiles (3 SHC)
  - ART 261 Photography I (3 SHC) *or* ART 266 Videography I (3 SHC) or
    - ART 264 Digital Photography I (3 SHC)
  - ART 283 Ceramics I (3 SHC)

Total Semester Hours Credit (SHC) in Program: 64-65

*   Students must meet the receiving university's foreign language and/or health and physical education requirements, if applicable, prior to or after transfer to the senior institution.

** 3 SHC in Speech/Communication may be substituted for 3 SHC in Humanities/Fine Arts. Speech/Communication may not substitute for the literature requirement.

Application to a University
Admission application deadlines vary; students must meet the deadline for the senior institution to which they plan to transfer. Upon successful completion of the associate degree, students who meet the requirements outlined in this pre-major articulation agreement will be eligible to be considered for admission as juniors to the signatory institutions offering the baccalaureate degree as listed at www.northcarolina.edu/content.php/aa/planning/traditional.htm or in the NC Independent Colleges and Universities Handbook which is available online at www.ncicu.org/publications. Students are encouraged to contact the senior institution to confirm degree offerings.

Admission to the Major
Grade point average requirements vary, and admission is competitive across the several programs in Art Education. Admission to teacher licensure programs requires satisfactory scores on PRAXIS I and II.

Art (A1020A)
Associate in Fine Arts Pre-Major

The Associate in Fine Arts degree shall be granted for planned programs of study consisting of a minimum of 64 and a maximum of 65 semester hours of approved college transfer courses. (Ref. 23 NCAC 2E.0204) Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and the basic use of computers.

GENERAL EDUCATION CORE (28 SHC)*
The general education core includes study in the areas of humanities and fine arts, social and behavioral sciences, natural sciences and mathematics, and English composition.

English Composition (6 SHC)

Humanities/Fine Arts (6 SHC**)
Select **two** courses from two of the following discipline areas: art, drama, dance, foreign languages, interdisciplinary humanities, literature, music, philosophy, and religion. One course must be a literature course.

Social/Behavioral Sciences (9 SHC)
Select **three** courses from three of the following discipline areas: anthropology, economics, geography, history, political science, psychology, and sociology. One course must be a history course.

Natural Sciences/Mathematics (7 SHC)
Natural Sciences (4 SHC): Select one course, including accompanying laboratory work, from among the biological and physical science disciplines.

Mathematics (3 SHC): Select one course in introductory mathematics (college algebra, trigonometry, calculus).

OTHER REQUIRED HOURS (36-37 SHC)*
One semester hour of credit may be included in a sixty-five semester hour credit associate in fine arts program. The transfer of the 65th hour is not guaranteed.

If a two- or three- dimensional studio course is to transfer as a pre-major course, it must have ART 121 or ART 122 as a prerequisite.

Major Core: 15 SHC from the following:
ART 114 Art History Survey I (3 SHC)   ART 115 Art History Survey II (3 SHC)
ART 121 Two-Dimensional Design (3 SHC)   ART 122 Three-Dimensional Design (3 SHC)
ART 131 Drawing I (3 SHC)

Electives: 21 SHC from the following:

ART 116 Survey of American Art (3 SHC)   ART 117 Non-Western Art History (3 SHC)
ART 132 Drawing II (3 SHC)   ART 135 Figure Drawing I (3 SHC)
ART 171 Computer Art I (3 SHC)   ART 222 Wood Design I (3 SHC)
ART 223 Wood Design II (3 SHC)   ART 231 Printmaking I (3 SHC)
ART 232 Printmaking II (3 SHC)   ART 235 Figure Drawing II (3 SHC)
ART 240 Painting I (3 SHC)   ART 241 Painting II (3 SHC)
ART 244 Watercolor (3 SHC)   ART 245 Metals I (3 SHC)
ART 246 Metals II (3 SHC)   ART 247 Jewelry I (3 SHC)
ART 248 Jewelry II (3 SHC)   ART 250 Surface Design: Textiles (3 SHC)
ART 251 Weaving I (3 SHC)   ART 252 Weaving II (3 SHC)
ART 261 Photography I (3 SHC)   ART 262 Photography II (3 SHC)
ART 263 Color Photography (3 SHC)   ART 264 Digital Photography I (3 SHC)
ART 265 Digital Photography II (3 SHC)   ART 266 Videography I (3 SHC)
ART 267 Videography II (3 SHC)   ART 271 Computer Art II (3 SHC)
ART 275 Intro to Commercial Art (3 SHC) ART 281 Sculpture I (3 SHC)
ART 282 Sculpture II (3 SHC)   ART 283 Ceramics I (3 SHC)
ART 284 Ceramics II (3 SHC)   ART 289 Museum Study (3 SHC)

Studio art courses must meet the following criteria:
- 6 contact hours for each 3 credit studio class
- All two-dimensional studio art classes, except ART 131 Drawing I, must require a prerequisite of ART 121 Design I.

All three-dimensional studio art classes must require a prerequisite of ART 122 Design II.

*Students must meet the receiving university's foreign language and/or health and physical education requirements, if applicable, prior to or after transfer to the senior institution.

**3 SHC in Speech/Communication may be substituted for 3 SHC in Humanities/Fine Arts. Speech/Communication may not substitute for the literature requirement.

Validation of the level of achievement in studio course work may be determined through portfolio review at the receiving institution.

Application to a University
Admission application deadlines vary; students must meet the deadline for the senior institution to which they plan to transfer. Upon successful completion of the associate degree, students who meet the requirements outlined in this pre-major articulation agreement will be eligible to be considered for admission as juniors to the signatory institutions offering the baccalaureate degree as listed at www.northcarolina.edu/content.php/aa/planning/traditional.htm or in the NC Independent Colleges and Universities Handbook which is available online at www.ncicu.org/publications. Students are encouraged to contact the senior institution to confirm degree offerings.

Admission to the Major
Grade point average requirements vary, and admission is competitive across the several programs in Art. Admission to teacher licensure programs requires satisfactory scores on PRAXIS I and PRAXIS II.

CURRICULUM STANDARD

Curriculum Program Title   **Scientific Graphics Technology**   Code   **A40360**

Concentration   **(not applicable)**

Curriculum Description

The Scientific Graphics Technology curriculum provides instruction in graphical techniques for understanding and communicating information. These techniques are used in scientific, technical, and design fields such as medicine, earth sciences, mathematics, engineering, and architecture. Graphics software usage and construction are emphasized.

Core courses cover visualization (information display), computer graphics, and 2-D/3-D design and analysis software. Students also receive instruction in computing, mathematics, art, psychology, and communication skills. Advanced courses are available in data visualization, design visualization, and graphics programming.

Graduates are prepared to provide visualization support services for engineers, scientists, and other technical specialists. Computer graphics programming is another career opportunity. The skills acquired in this curriculum may also enhance the marketability of a graduate in an existing technical career.

*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	**Diploma**	**Certificate**
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Scientific Graphics Technology A40360			
	AAS	**Diploma**	**Certificate**
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**55 SHC**	**NR**	
Required Courses: ART 121 Two-Dimensional Design 3 SHC ART 122 Three-Dimensional Design 3 SHC CSC 133 C Programming 3 SHC CSC 233 Adv C Programming 3 SHC CSC 249 Data Struct & Algorithms 3 SHC MAT 271 Calculus I 4 SHC MAT 280 Linear Algebra 3 SHC SGR 110 Scientific Graphics 3 SHC SGR 131 Comp Graphics Concepts 4 SHC SGR 141 Intro to Visualization 4 SHC SGR 142 Data Visualization I 3 SHC SGR 161 Intro to 3-D Design 3 SHC SGR 162 Advanced 3-D Design 3 SHC SGR 233 Graphics Programming I 3 SHC SGR 234 Graphics Programming II 3 SHC SGR 242 Data Visualization II 3 SHC SGR 280 Visualization Project 4 SHC **Required Subject Areas:** None			
B. CONCENTRATION *(Not applicable)*			
C. OTHER MAJOR HOURS *To be selected from the following prefixes:* ART, CIS, COE, CSC, MAT, and SGR *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title	**Cancer Information Management**	Code	**A45130**
Concentration	**(not applicable)**		

Curriculum Description

The Cancer Information Management curriculum is designed to provide individuals with the knowledge and skills necessary to maintain a cancer data collection system that is consistent with medical, administrative, ethical, legal and accreditation requirements.

Students will analyze health records according to standards set by various agencies, compile, maintain, monitor, and report cancer data for research, quality management, facility planning and marketing; abstract and code clinical data; and obtain survival data through yearly follow-up.

Graduates may be eligible to take the national certifying examination given by the National Cancer Registrars Association to become a Certified Tumor Registrar (CTR). Employment opportunities include health care facilities, data organizations, and government agencies.

*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II. **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	**Diploma**	**Certificate**
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Cancer Information Management (A45130)			
	AAS	**Diploma**	**Certificate**
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**51 SHC**	**NR**	**NR**
Required Courses:			
BIO 271 Pathophysiology 3 SHC			
CIM 110 Registry Org & Management 3 SHC			
CIM 125 Cancer Disease Management 4 SHC			
CIM 150 Oncology Coding/Stag Sys 4 SHC			
CIM 211 Abstract Prin & Prac I 3 SHC			
CIM 212 Abstract Prin & Prac II 3 SHC			
CIM 225 Cancer Patient Follow-up 2 SHC			
CIM 250 Cancer Stat/Epidemiology 3 SHC			
CIM 275 Professional Direct Prac 4 SHC			
HIT 110 Fundamentals of HIM 2 SHC			
HIT 226 Principles of Disease 3 SHC			
MED 121 Medical Terminology I 3 SHC			
MED 122 Medical Terminology II 3 SHC			
Required Subject Areas:			
Anatomy & Physiology. Select one sequence.			
BIO 165 Anatomy & Physiology I 4 SHC &			
BIO 166 Anatomy & Physiology II 4 SHC			
or			
BIO 168 Anatomy & Physiology I 4 SHC &			
BIO 169 Anatomy & Physiology II 4 SHC			
Management. Select one:			
BUS 137 Principles of Management 3 SHC			
HIT 218 Mgmt Principles in HIT 3 SHC			
B. CONCENTRATION *(Not applicable)*			
C. OTHER MAJOR HOURS *To be selected from the following prefixes:* BIO, BUS, CIM, CIS, COE, CSC, HIT, and MED *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title   **Computer Information Technology**   Code   **A25260**

Concentration   **(not applicable)**

Curriculum Description

The Computer Information Technology curriculum is designed to prepare graduates for employment with organizations that use computers to process, manage, and communicate information. This is a flexible curriculum that can be customized to meet community information systems needs.

Course work will develop a student's ability to communicate complex technical issues related to computer hardware, software, and networks in a manner that computer users can understand. Classes cover computer operations and terminology, operating systems, database, networking, security, and technical support.

Graduates should qualify for employment in entry-level positions with businesses, educational systems, and governmental agencies which rely on computer systems to manage information. Graduates should be prepared to sit for industry-recognized certification exams.

Curriculum Requirements*
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Computer Information Technology A25260

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE *A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree.*	**35-36 SHC**	**12 SHC**	

Required Courses:

CIS 115	Intro to Programming and Logic	3 SHC
CTS 120	Hardware/Software Support	3 SHC
CTS 285	Systems Analysis & Design	3 SHC
CTS 289	Systems Support Project	3 SHC
DBA 110	Database Concepts	3 SHC
NOS 110	Operating System Concepts	3 SHC
NOS 130	Windows Single User	3 SHC
NOS 230	Windows Admin I	3 SHC
SEC 110	Security Concepts	3 SHC

Required Subject Areas:

Basic Computer Skills. Select one:

CIS 110	Introduction to Computers	3 SHC
CIS 111	Basic PC Literacy	2 SHC

Business. Select one:

BUS 110	Introduction to Business	3 SHC
CTS 115	Info Sys Business Concepts	3 SHC

Networking. Select one:

NET 110	Networking Concepts	3 SHC
NET 125	Networking Basics	3 SHC

B. CONCENTRATION *(not applicable)*

C. OTHER MAJOR HOURS
To be selected from the following prefixes:
ACC, BUS, CCT, CET, CIS, COE, CSC, CTS, DBA, DES, DME, ECO, ELN, GIS, GRD, HBI, HPC, MIT, NET, NOS, OMT, OST, SEC, SGD, and WEB

Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.

CURRICULUM STANDARD

Curriculum Program Title   **Computer Programming**   Code   **A25130**

Concentration   **(not applicable)**

Curriculum Description

The Computer Programming curriculum prepares individuals for employment as computer programmers and related positions through study and applications in computer concepts, logic, programming procedures, languages, generators, operating systems, networking, data management, and business operations.

Students will solve business computer problems through programming techniques and procedures, using appropriate languages and software. The primary emphasis of the curriculum is hands-on training in programming and related computer areas that provide the ability to adapt as systems evolve.

Graduates should qualify for employment in business, industry, and government organizations as programmers, programmer trainees, programmer/analysts, computer operators, systems technicians, or database specialists.

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*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204(3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204(3)]

A. Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Computer Programming A25130

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE *A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree.*	41-42 SHC	12 SHC	

Required Courses:

CIS 115	Intro to Prog & Logic	3 SHC
CTS 285	Systems Analysis & Design	3 SHC
CSC 289	Programming Capstone Proj	3 SHC
DBA 110	Database Concepts	3 SHC
NOS 110	Operating Systems Concepts	3 SHC
SEC 110	Security Concepts	3 SHC

Required Subject Areas:

Basic Computer Skills. Select one:

CIS 110	Introduction to Computers	3 SHC
CIS 111	Basic PC Literacy	2 SHC

Business. Select one:

BUS 110	Introduction to Business	3 SHC
CTS 115	Info Sys Business Concepts	3 SHC

Networking. Select one:

NET 110	Networking Concepts	3 SHC
NET 125	Networking Basics	3 SHC

Operating Systems. Select one:

NOS 120	Linux/UNIX Single User	3 SHC
NOS 130	Windows Single User	3 SHC
NOS 149	Operating System – MVS [TM]	3 SHC
NOS 244	Operating System - AS/400	3 SHC

Continued on next page

Computer Programming A25130 (continued)			
Programming. Select two:			
CSC 133 C Programming 3 SHC			
CSC 134 C++ Programming 3 SHC			
CSC 135 COBOL Programming 3 SHC			
CSC 136 Fortran Programming 3 SHC			
CSC 138 RPG Programming 3 SHC			
CSC 139 Visual BASIC Progr 3 SHC			
CSC 141 Visual C++ Progr 3 SHC			
CSC 142 Visual COBOL Progr 3 SHC			
CSC 150 Visual RPG Progr 3 SHC			
CSC 151 JAVA Programming 3 SHC			
CSC 153 C# Programming 3 SHC			
Advanced Programming. Select two:			
CSC 233 Adv C Programming 3 SHC			
CSC 234 Adv C++ Programming 3 SHC			
CSC 235 Adv COBOL Programming 3 SHC			
CSC 236 Adv Fortran Programming 3 SHC			
CSC 238 Adv RPG Programming 3 SHC			
CSC 239 Adv Visual BASIC Prog 3 SHC			
CSC 241 Adv Visual C++ Prog 3 SHC			
CSC 242 Adv Visual COBOL Prog 3 SHC			
CSC 250 Adv Visual RPG Prog 3 SHC			
CSC 251 Adv JAVA Programming 3 SHC			
CSC 253 Adv C# Programming 3 SHC			
B. **CONCENTRATION** *(not applicable)*			
C. **OTHER MAJOR HOURS** *To be selected from the following prefixes:*			
ACC, BUS, CET, CIS, COE, CSC, CTS, DBA, ECM, ECO, GRA, GRD, ISC, MAT, NET, NOS, OMT, OST, SEC, SGD, SGR, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title   **High Performance Computing**   Code   **A25230**

Concentration   **(not applicable)**

Curriculum Description

The High Performance Computing curriculum is designed to prepare students for employment with organizations that require experience with HPC technology. Students will learn to assemble, program and operate high performance cluster computers.

The curriculum includes introductory and advanced levels of HPC architecture including distributed-memory systems, parallel programming concepts, high-speed networking and LINUX/UNIX operating systems.

Program graduates can expect to work in an HPC environment that supports educational, industrial, or government agencies that require HPC skills.

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*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable)*. A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

High Performance Computing A25230		AAS	Diploma	Certificate
Minimum Major Hours Required		**49 SHC**	**30 SHC**	**12 SHC**
A. **CORE**		**33 SHC**		
Required Courses:				
CSC 125 Intro Parallel Programming	3 SHC			
CSC 225 Adv. Parallel Programming	3 SHC			
HPC 110 Intro to HPC	3 SHC			
HPC 130 Intro to HPC Communication	3 SHC			
HPC 140 Into to HPC Architecture	3 SHC			
HPC 230 Adv. HPC Communication	3 SHC			
HPC 240 Adv. HPC Architecture	3 SHC			
HPC 285 Systems Analysis and Designs	3 SHC			
NOS 110 Operating System Concepts	3 SHC			
NOS 120 Linux/UNIX Single User	3 SHC			
NOS 220 Linux/UNIX Admin I	3 SHC			
B. **CONCENTRATION** *(not applicable)*				
C. **OTHER MAJOR HOURS** *To be selected from the following prefixes:* CIS, COE, CSC, HPC, ITN, NET, NOS, OSS, SGR, TNE, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*				

CURRICULUM STANDARD

Curriculum Program Title	**Information Systems Security**	Code	**A25270**
Concentration	**(not applicable)**		

Curriculum Description

Information Systems Security covers a broad expanse of technology concepts. This curriculum provides individuals with the skills required to implement effective and comprehensive information security controls.

Course work includes networking technologies, operating systems administration, information policy, intrusion detection, security administration, and industry best practices to protect data communications.

Graduates should be prepared for employment as security administrators. Additionally, they will acquire the skills that allow them to pursue security certifications.

*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses, which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12-semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Information Systems Security A25270			
	AAS	**Diploma**	**Certificate**
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. **CORE** *A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree.* *Courses restricted to this curriculum are designated with ****	**44-45 SHC**	**12 SHC**	

Required Courses:

	CIS	115	Intro to Programming and Logic	3 SHC
	DBA	110	Database Concepts	3 SHC
	NET	125	Networking Basics	3 SHC
	NET	126	Routing Basics	3 SHC
	NOS	110	Operating System Concepts	3 SHC
	NOS	130	Windows Single User	3 SHC
	SEC	110	Security Concepts	3 SHC
	SEC	150	Secure Communications	3 SHC
	SEC	160	Secure Admin I	3 SHC
	SEC	210	Intrusion Detection	3 SHC
***	SEC	220	Defense-in-Depth	3 SHC
***	SEC	289	Security Capstone Project	3 SHC

Required Subject Areas:
Basic Computer Skills. Select one:

CIS	110	Introduction to Computers	3 SHC
CIS	111	Basic PC Literacy	2 SHC

Business. Select one:

BUS	110	Introduction to Business	3 SHC
CTS	115	Info Sys Business Concepts	3 SHC

Operating Systems. Select one:

NOS	120	Linux/UNIX Single User	3 SHC
NOS	230	Windows Admin I	3 SHC

B. **CONCENTRATION** *(not applicable)*

Information Systems Security A25270 (Continued)

C. **OTHER MAJOR HOURS** *To be selected from the following prefixes:* ACC, BUS, CCT, CET, CIS, CJC, COE, CSC, CTS, DBA, ECM, ITN, NET, NOS, OST, SEC, TNE, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title	**Information Systems Security**	Code	**A2527A**
Concentration	**Operating Systems**		

Curriculum Description

Operating Systems is a concentration under the curriculum title of Information Systems Security. This curriculum provides individuals with the skills required to implement effective and comprehensive information security controls.

Course work includes networking technologies, advanced operating systems administration, information policy, intrusion detection, information assurance, security administration, attack methodology, and industry best practices to protect communications.

Graduates should be prepared for employment as security analysts, system administrators, or security administrators. Additionally, they will acquire the skills that allow them to pursue operating system and security certifications.

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*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II. **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	**Diploma**	**Certificate**
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A.   **Core.** The subject/course core is comprised of subject areas and/or specific courses, which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B.   **Concentration** *(if applicable).* A concentration of study must include a minimum of 12-semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C.   **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Information Systems Security/Operating Systems A2527A

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**44-45 SHC**	**NR**	**NR**

Courses restricted to this curriculum are designated with ***

Required Courses:

CIS	115	Intro to Programming and Logic	3 SHC
DBA	110	Database Concepts	3 SHC
NET	125	Networking Basics	3 SHC
NET	126	Routing Basics	3 SHC
NOS	110	Operating System Concepts	3 SHC
NOS	130	Windows Single User	3 SHC
SEC	110	Security Concepts	3 SHC
SEC	150	Secure Communications	3 SHC
SEC	160	Secure Admin I	3 SHC
SEC	210	Intrusion Detection	3 SHC
*** SEC	220	Defense-in-Depth	3 SHC
*** SEC	289	Security Capstone Project	3 SHC

Required Subject Areas:

Basic Computer Skills. **Select one:**

CIS	110	Introduction to Computers	3 SHC
CIS	111	Basic PC Literacy	2 SHC

Business. Select one:

BUS	110	Introduction to Business	3 SHC
CTS	115	Info Sys Business Concepts	3 SHC

Operating Systems. Select one:

NOS	120	Linux/UNIX Single User	3 SHC
NOS	230	Windows Admin I	3 SHC

Information Systems Security/Operating Systems A2527A

	13 SHC	NR	NR

B. CONCENTRATION *(not applicable)*
Courses unique to the concentration are designated with**
 	
*   SEC 230   Attack Methodology   4 SHC
**   SEC 260   Secure Admin II   3 SHC
 	
Operating Systems. **Select one sequence:**
 	
       NOS 220   Linux/UNIX Admin I   3 SHC
       NOS 221   Linux/UNIX Admin II   3 SHC
 	
OR
 	
       NOS 231   Windows Admin II   3 SHC
       NOS 232 Windows Admin III 3 SHC			

C. OTHER MAJOR HOURS *To be selected from the following prefixes* BUS, CCT, CET, CIS, CJC, COE, CSC, CTS, DBA, ITN, NET, NOS, SEC, TNE, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title **Information Systems Security** Code **A2527B**

Concentration **Security Hardware**

Curriculum Description

Security Hardware is a concentration under the curriculum title of Information Systems Security. This curriculum covers a broad expanse of technology concepts. This curriculum provides individuals with the skills required to implement effective and comprehensive information network security controls.

Course work includes advanced networking technologies, operating systems administration, information security policy, intrusion detection, firewall technologies, information assurance, security administration, and industry best practices to protect data communications.

Graduates should be prepared for employment as network security specialists, network administrators, or security administrators. Additionally, they will acquire the skills that allow them to pursue hardware, advanced networking and security certifications.

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*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II. **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A.   Core. The subject/course core is comprised of subject areas and/or specific courses, which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B.   Concentration *(if applicable).* A concentration of study must include a minimum of 12-semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C.   Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Information Systems Security/Security Hardware A2527B

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**44-45 SHC**	**NR**	**NR**

Courses restricted to this curriculum are designated with ***

Required Courses:

CIS 115	Intro to Prog & Logic	3 SHC
DBA 110	Database Concepts	3 SHC
NET 125	Networking Basics	3 SHC
NET 126	Routing Basics	3 SHC
NOS 110	Operating System Concepts	3 SHC
NOS 130	Window Single User	3 SHC
SEC 110	Security Concepts	3 SHC
SEC 150	Secure Communications	3 SHC
SEC 160	Secure Admin I	3 SHC
SEC 210	Intrusion Detection	3 SHC
*** SEC 220	Defense-in-Depth	3 SHC
*** SEC 289	Security Capstone Project	3 SHC

Required Subject Areas:

Basic Computer Skills. **Select one:**

CIS 110	Introduction to Computers	3 SHC
CIS 111	Basic PC Literacy	2 SHC

Business. Select one:

BUS 110	Introduction to Business	3 SHC
CTS 115	Info Sys Business Concepts	3 SHC

Operating Systems. Select one:

NOS 120	Linux/UNIX Single User	3 SHC
NOS 230	Windows Admin I	3 SHC

Information Systems Security/Security Hardware A2527B

			13 SHC	NR	NR
B.	**CONCENTRATION** *(not applicable)* *Courses unique to a concentration are designated with ** * NET 225 Routing & Switching I 3 SHC NET 226 Routing & Switching II 3 SHC ** SEC 270 Secure Routing/Firewalls 3 SHC ** SEC 275 Advanced Firewalls 4 SHC				
C.	**OTHER MAJOR HOURS** *To be selected from the following prefixes:* BUS, CCT, CET, CIS, CJC, COE, CSC, CTS, DBA, ITN, NET, NOS, SEC, TNE, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*				

CURRICULUM STANDARD

Curriculum Program Title	**Medical Dosimetry (Diploma)**	Code	**D45450**
Concentration	*(not applicable)*		

Curriculum Description

The curriculum is designed to prepare individuals to work in the care of cancer patients as medical dosimetrist. The curriculum provides instruction to enable the participant to become a member of the radiation oncology team.

The curriculum content includes specific coursework to provide classroom and direct clinical experience to train the student in the fundamentals of medical dosimetry practice using current technology, tools and techniques. Students will participate in studies related to the role of the medical dosimetrist and professional ethics, radiation oncology anatomy, treatment planning, dose calculations, clinical oncology, brachytherapy, dosimetry physics, radiation protection, quality assurance and computer applications.

Graduates of the program will be able to obtain employment as a medical dosimetrist. After additional clinical experience (currently 12 months) as a practicing dosimetrist the graduates will be able to apply to the Medical Dosimetrist Certification Board (MDCB) to sit for a national certification.

Admission criteria include the completion of a diploma in Radiation Therapy.

Curriculum Requirements*
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III.   **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Medical Dosimetry (Diploma) (D45450)

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE **Required Courses**: DOS 210 Introduction to Dosimetry 2 SHC DOS 220 Treatment Planning I 3 SHC DOS 221 Treatment Planning II 2 SHC DOS 230 Clinical Research Exper 2 SHC DOS 240 Clinical Education I 8 SHC DOS 241 Clinical Education II 8 SHC DOS 242 Clinical Education III 5 SHC DOS 243 Dosimetry Physics II 2 SHC DOS 250 Dose Calculations 2 SHC DOS 260 Brachytherapy Planning 3 SHC		**37 SHC**	
B. CONCENTRATION *(Not applicable)*			
C. OTHER MAJOR HOURS *To be selected from the following prefixes:* CIS, COE, CSC, CTS, DOS, RAD, and RTT *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title | **Networking Technology** | Code | **A25340**

Concentration | **(not applicable)**

Curriculum Description

The Networking Technology curriculum prepares individuals for employment supporting network infrastructure environments. Students will learn how to use technologies to provide reliable transmission and delivery of data, voice, image, and video communications in business, industry, and education.

Course work includes design, installation, configuration, and management of network infrastructure technologies and network operating systems. Emphasis is placed on the implementation and management of network software and the implementation and management of hardware such as switches and routers.

Graduates may find employment in entry-level jobs as local area network managers, network operators, network analysts, and network technicians. Graduates may also be qualified to take certification examinations for various network industry certifications, depending on their local program.

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*Curriculum Requirements**

[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I.   General Education. Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II.   Major Hours. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. Other Required Hours. A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	**Diploma**	**Certificate**
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit (SHC)	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours
[ref. 23 NCAC 02E.0204 (3)]

A. **Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. **Concentration** *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. **Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Networking Technology A25340

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. **CORE** *A diploma offered under this AAS degree requires a minimum of 12 SHC extracted from the required subject/course core of the AAS degree*	**44-45 SHC**	**12 SHC**	
Required Courses:			
CIS 115 Intro to Prog & Logic — 3 SHC			
CTS 120 Hardware/Software Support — 3 SHC			
DBA 110 Database Concepts — 3 SHC			
NET 125 Networking Basics — 3 SHC			
NET 126 Routing Basics — 3 SHC			
NET 225 Routing & Switching I — 3 SHC			
NET 226 Routing & Switching II — 3 SHC			
NOS 110 Operating Systems Concepts — 3 SHC			
NOS 120 Linux/UNIX Single User — 3 SHC			
NOS 130 Windows Single User — 3 SHC			
SEC 110 Security Concepts — 3 SHC			
Required Subject Areas:			
Basic Computer Skills. Select one:			
CIS 110 Introduction to Computers — 3 SHC			
CIS 111 Basic PC Literacy — 2 SHC			
Business. Select one:			
BUS 110 Introduction to Business — 3 SHC			
CTS 115 Info Sys Business Concepts — 3 SHC			
Design. Select one:			
NET 240 Network Design — 3 SHC			
NET 289 Networking Project — 3 SHC			
Operating System Administration. Select one:			
NOS 220 Linux/UNIX Admin I — 3 SHC			
NOS 230 Windows Admin I — 3 SHC			
B. **CONCENTRATION** *(Not applicable)*			

Networking Technology A25340 (Continued)			
C. **OTHER MAJOR HOURS** *To be selected from the following prefixes:* BUS, CCT, CET, CIS, COE, CSC, CTS, DBA, ELC, NET, NOS, SEC, SGD, TNE, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			

CURRICULUM STANDARD

Curriculum Program Title | **Simulation and Game Development** | Code | **A25450**

Concentration | **(not applicable)**

Curriculum Description

The Simulation and Game Development curriculum provides a broad background in simulation and game development with practical applications in creative arts, visual arts, audio/video technology, creative writing, modeling, design, programming and management.

Students will receive hands-on training in design, 3D modeling, and programming for the purpose of creating simulations and games.

Graduates should qualify for employment as designers, artists, animators, programmers, testers, quality assurance analysts, engineers and administrators in the entertainment industry, health care, education, corporate training, and government organizations.

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*Curriculum Requirements**
[for associate degree, diploma, and certificate programs in accordance with 23 NCAC 02E.0204 (3)]

I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.

II. **Major Hours**. AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit. *(See second page for additional information.)*

III. **Other Required Hours.** A college may include courses to meet graduation or local employer requirements in a certificate, diploma, or associate in applied science program. These curriculum courses shall be selected from the Combined Course Library and must be approved by the System Office prior to implementation. Restricted, unique, or free elective courses may not be included as other required hours.

	AAS	Diploma	Certificate
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
Total Semester Hours Credit in Program	**64-76**	**36-48**	**12-18**

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*Within the degree program, the institution shall include opportunities for the achievement of competence in reading, writing, oral communication, fundamental mathematical skills, and basic use of computers.

Major Hours

[ref. 23 NCAC 02E.0204 (3)]

A. Core. The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.

B. Concentration *(if applicable).* A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.

C. Other Major Hours. Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours of credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicums, and internships, may be included in associate in applied science degrees up to a maximum of 8 semester hours of credit; in diploma programs up to a maximum of 4 semester hours of credit; and in certificate programs up to a maximum of 2 semester hours of credit.

Simulation and Game Development A25450

	AAS	Diploma	Certificate
Minimum Major Hours Required	**49 SHC**	**30 SHC**	**12 SHC**
A. CORE	**30 SHC**		
Required Courses:			
SGD 111 Introduction to SGD 3 SHC			
SGD 112 SGD Design 3 SHC			
SGD 114 3D Modeling 3 SHC			
SGD 212 SGD Design II 3 SHC			
SGD 289 SGD Project 3 SHC			
Required Subject Area:			
Programming. Select one:			
CSC 134 C++ Programming 3 SHC			
CSC 151 JAVA Programming 3 SHC			
CSC 153 C# Programming 3 SHC			
SGD 113 SGD Programming 3 SHC			
Select Additional 12 SHC from SGD courses 12 SHC			
B. CONCENTRATION *(Not applicable)*			
C. OTHER MAJOR HOURS *To be selected from the following prefixes:* ARC, ART, BUS, CIS, COE, CSC, CTS, DAN, DBA, DDF, DEA, DES, DFT, DME, DRA, ECO, ENT, FVP, GAM, GRA, GRD, GIS, MUS, NET, NOS, PHO, SGD, SGR, and WEB *Foreign language courses (including ASL) that are not designated as approved other major hours may be included in all programs up to a maximum of 3 semester hours of credit.*			