Student Learning Outcomes for NOVA’s Degree-Awarding Programs and Select Certificates

Research Report No. 97-11

Office of Institutional Research, Planning, and Assessment
Northern Virginia Community College

Fall 2011
The purpose of the Office of Institutional Research, Planning, and Assessment is to conduct analytical studies and provide information in support of institutional planning, policy formulation and decision making. In addition, the office provides leadership and support in research related activities to members of the NOVA community engaged in planning and evaluating the institution’s success in accomplishing its mission.
# Table of Contents

<table>
<thead>
<tr>
<th>Program</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>iii</td>
</tr>
<tr>
<td>Accounting, A.A.S.</td>
<td>1</td>
</tr>
<tr>
<td>Administration of Justice, A.A.S.</td>
<td>1</td>
</tr>
<tr>
<td>Air Conditioning and Refrigeration, A.A.S.</td>
<td>2</td>
</tr>
<tr>
<td>American Sign Language to English Interpretation, A.A.S.</td>
<td>2</td>
</tr>
<tr>
<td>Architecture Technology, A.A.S.</td>
<td>3</td>
</tr>
<tr>
<td>Automotive Technology, A.A.S.</td>
<td>3</td>
</tr>
<tr>
<td>Biotechnology, A.A.S.</td>
<td>4</td>
</tr>
<tr>
<td>Business Administration, A.S.</td>
<td>4</td>
</tr>
<tr>
<td>Business Management, A.A.S.</td>
<td>5</td>
</tr>
<tr>
<td>Clinical Data Coding Career Studies Certificate</td>
<td>5</td>
</tr>
<tr>
<td>Communication Design, A.A.S.</td>
<td>6</td>
</tr>
<tr>
<td>Computer Science, A.S.</td>
<td>6</td>
</tr>
<tr>
<td>Construction Management Technology, A.A.S.</td>
<td>6</td>
</tr>
<tr>
<td>Contract Management, A.A.S.</td>
<td>7</td>
</tr>
<tr>
<td>Dental Hygiene, A.A.S.</td>
<td>7</td>
</tr>
<tr>
<td>Diagnostic Medical Sonography, A.A.S.</td>
<td>7</td>
</tr>
<tr>
<td>Drivers Education Career Studies Certificate</td>
<td>8</td>
</tr>
<tr>
<td>Early Childhood Development, A.A.S.</td>
<td>8</td>
</tr>
<tr>
<td>Emergency Medical Services, A.A.S.</td>
<td>8</td>
</tr>
<tr>
<td>Engineering, A.S.</td>
<td>9</td>
</tr>
<tr>
<td>Engineering Technology, A.A.S.</td>
<td>9</td>
</tr>
<tr>
<td>Fine Arts, A.A., A.A.A.</td>
<td>9</td>
</tr>
<tr>
<td>Fine Arts, A.A.A. - Photography Specialization</td>
<td>10</td>
</tr>
<tr>
<td>Fire Science Technology, A.A.S.</td>
<td>10</td>
</tr>
<tr>
<td>Fitness Career Studies Certificate</td>
<td>10</td>
</tr>
<tr>
<td>General Studies, A.S.</td>
<td>11</td>
</tr>
<tr>
<td>General Studies, A.S. - Recreation and Parks and Leisure Studies Specialization</td>
<td>11</td>
</tr>
<tr>
<td>Program</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Geographic Information Systems Career Studies Certificate</td>
<td>12</td>
</tr>
<tr>
<td>Health Information Management, A.A.S.</td>
<td>12</td>
</tr>
<tr>
<td>Historic Preservation Career Studies Certificate</td>
<td>12</td>
</tr>
<tr>
<td>Horticulture Technology, A.A.S.</td>
<td>13</td>
</tr>
<tr>
<td>Hospitality Management, A.A.S.</td>
<td>13</td>
</tr>
<tr>
<td>Information Systems Technology, A.A.S.</td>
<td>13</td>
</tr>
<tr>
<td>Information Technology, A.S.</td>
<td>13</td>
</tr>
<tr>
<td>Interior Design, A.A.S.</td>
<td>14</td>
</tr>
<tr>
<td>Liberal Arts, A.A.</td>
<td>14</td>
</tr>
<tr>
<td>Marketing, A.A.S.</td>
<td>15</td>
</tr>
<tr>
<td>Massage Therapy Career Studies Certificate</td>
<td>15</td>
</tr>
<tr>
<td>Medical Laboratory Technology, A.A.S.</td>
<td>15</td>
</tr>
<tr>
<td>Music, A.A., A.A.A., and Jazz Specialization</td>
<td>16</td>
</tr>
<tr>
<td>Music Recording Technology Certificate</td>
<td>16</td>
</tr>
<tr>
<td>Nursing, A.A.S.</td>
<td>16</td>
</tr>
<tr>
<td>Paralegal Studies, A.A.S.</td>
<td>17</td>
</tr>
<tr>
<td>Phlebotomy Career Studies Certificate</td>
<td>17</td>
</tr>
<tr>
<td>Photography, A.A.S.</td>
<td>18</td>
</tr>
<tr>
<td>Physical Therapist Assistant, A.A.S.</td>
<td>18</td>
</tr>
<tr>
<td>Professional Writing for Business, Government and Industry Certificate</td>
<td>18</td>
</tr>
<tr>
<td>Radiography, A.A.S.</td>
<td>19</td>
</tr>
<tr>
<td>Real Estate Brokerage Career Studies Certificate</td>
<td>19</td>
</tr>
<tr>
<td>Real Estate Residential Appraisal Career Studies Certificate</td>
<td>19</td>
</tr>
<tr>
<td>Respiratory Therapy, A.A.S.</td>
<td>19</td>
</tr>
<tr>
<td>Science, A.S.</td>
<td>20</td>
</tr>
<tr>
<td>Social Sciences, A.S.</td>
<td>20</td>
</tr>
<tr>
<td>Social Sciences, A.S. - Teacher Education Specialization</td>
<td>21</td>
</tr>
<tr>
<td>Substance Abuse Rehabilitation Counselor Certificate</td>
<td>21</td>
</tr>
<tr>
<td>Travel and Tourism Certificate</td>
<td>21</td>
</tr>
<tr>
<td>Veterinary Technology, A.A.S.</td>
<td>22</td>
</tr>
<tr>
<td>Welding: Basic Techniques Career Studies Certificate</td>
<td>22</td>
</tr>
</tbody>
</table>
Introduction

As part of the recent nation-wide movement to increase accountability and transparency in higher education, Northern Virginia Community College (NOVA) has made the assessment of student learning outcomes a priority. Assessment is defined as “the ongoing process of:

- Establishing clear, measurable expected outcomes of student learning.
- Ensuring that students have sufficient opportunities to achieve those outcomes.
- Systematically gathering, analyzing, and interpreting evidence to determine how well student learning matches our expectations.
- Using the resulting information to understand and improve student learning.” ¹

To begin the process of assessing student learning, programs must first determine the student learning outcomes for their curriculum. Student learning outcomes are defined as “the accumulated knowledge, skills, and attitudes that students develop during a course of study.”²

NOVA determined that all degree-awarding programs and selected certificates must each designate one faculty member to shepherd the program/certificate through the assessment process. In order to provide support to programs and their designated faculty (called SLO Lead Faculty), the Office of Institutional Research, Planning, and Assessment (OIRPA) offered a series of workshops devoted to writing student learning outcomes in Spring 2009. More than fifty faculty members took part in the various sessions offered across the College.

In Fall 2009, SLO Lead Faculty submitted student learning outcomes for their respective programs/certificates. These statements have been gathered together in this report. With this submission, the SLO Lead Faculty and their programs/certificates made significant progress in moving forward with their assessment activities. Since then some programs have revised or updated their student learning outcomes. As defined above, establishing student learning outcomes is only the first step in the ongoing cycle of assessment. Further accomplishments by programs/certificates will be detailed in later reports.

²http://www.web.virginia.edu/iaas/assessment/outcomes.htm
Student Learning Outcomes for
NOVA’s Degree-Awarding Programs
and Select Certificates

Accounting, A.A.S.
Coordinating Dean: Bruce Bowman, AL
SLO Lead Faculty: Barbara Hopkins, MA

• Be able to perform all steps in the accounting process, including production of basic financial statements
• Be able to apply generally accepted accounting principles (GAAP)
• Be able to describe federal tax rules and apply them in preparing individual income tax returns
• Be able to describe and make distinctions between the various taxable entities (i.e., individuals, corporations and partnerships)
• Be able to use budgeting and product costing techniques and methods to evaluate business operations
• Be able to identify generally accepted auditing standards (GAAS) and the additional requirements imposed by the Sarbanes-Oxley Act
• Be able to access the various technical and professional publications to use as reference sources
• Be able to write and speak in English well enough to communicate accounting procedures and concepts in a professional environment
• Be able to describe and make distinctions between various accounting methods under U.S. GAAP and international financial reporting standards (IFRS)

Administration of Justice, A.A.S.
Coordinating Dean: Celeste Dubeck-Smith, AN
SLO Lead Faculty: Jo Ann Short, WO

• Name and describe the steps in the criminal adjudication process that involve the police, the courts and corrections.
• Define the basic teachings of criminology, criminalistics, criminal justice and forensic science.
• Describe how crime is measured by the means of the Uniform Crime Report, National Crime Victimization Survey, Self-Report data and the National Incident-Based Reporting System.
• Define generally, domestic and international terrorism, organized crime, classified information, and proprietary information.
• Identify and explain the major perspectives concerning crime causation including the classical approach, biological approach, psychological approach and the sociological approach.
• Present a power point presentation of an ethical dilemma or case study relating to a criminal justice issue.
• Articulate and explain the rights of citizens contained in the 4th, 5th, and 6th amendments related to any one specific case within the criminal justice system.
• Explain basic investigative concepts relating to crime.
• Describe the elements of at least five (5) crimes.
### Air Conditioning and Refrigeration, A.A.S.

Coordinating Dean: Stacy Thomas  
SLO Lead Faculty: Dick Wirz, WO

- Technical knowledge and capabilities: Design, install, maintain, and repair a basic residential air conditioning and heating system.
- Problem prevention and solutions: Analyze an HVACR system's current operation, evaluate its ability to adequately provide for the equipment owner’s comfort requirements, and if necessary, formulate a strategy to correct any deficiencies.
- Presentation, manners, and reliability: Demonstrate the ability to choose attire appropriate to the HVACR customers being served, utilize appropriate manners that will please a diverse population of possible customers, and demonstrate they may be relied upon to perform required duties properly and on time.
- Positive attitude and good work ethic: Demonstrate a positive attitude and good job performance.
- Honesty, ethical behavior, and respect: Assess and demonstrate what is considered honest and ethical behavior in both personal and business situations. Demonstrate respect for others.
- Speech and written communication skills: Perform good communication skills, both oral and written.
- Empathy with both customer and employer: Analyze customer concerns, empathize with their position, and be able to differentiate between the demands of the customer and the position of the technician’s employer.
- Priorities and self-image: Demonstrate the ability to set priorities. Demonstrate an ability to perform a personal analysis and evaluation in order to determine an accurate self-image and to formulate a program for improvement, if necessary.
- Productive: Perform good work habits, focus on the task-at-hand, and complete assignments on time.
- Continued improvement in knowledge and skills: Evaluate what additional skills or knowledge may be necessary for personal success, then choose a positive direction to attain them.

### American Sign Language to English Interpretation, A.A.S.

Coordinating Dean: Charlotte Calobrisi, AN  
SLO Lead Faculty: Paula Debes, AN

- Students will demonstrate an advanced level of receptive and expressive proficiency in American Sign Language, including knowledge of advanced linguistic structures and vocabulary.
- Students will demonstrate an advanced level of receptive and expressive proficiency in English, including knowledge of advanced linguistic structures and vocabulary.
- Students will demonstrate the ability to interpret a 20 minute live and videotaped segment of American Sign Language into English with 80% accuracy.
- Students will demonstrate the ability to interpret a 20 minute live and videotaped segment of English into American Sign Language with 80% accuracy.
- Students will demonstrate the ability to transliterate a 20 minute live and videotaped segment of Contact Sign into English with 80% accuracy.
- Students will demonstrate the ability to transliterate a 20 minute live and videotaped
segment of English into Contact Sign with 80% accuracy.

- Students will apply critical thinking to make ethical decisions regarding a variety of situations, guided by ethics standards of the profession.
- Students will demonstrate professional behavior and cultural sensitivity when working with Deaf and hearing clients.
- Students will demonstrate the ability to evaluate an interpreting situation, choose the appropriate language/communication method, manage the environment, and work with team interpreters if available.
- Students will be able to describe the history of the interpreting profession and identify current trends, industry standards, and resources for professional development.

---

**Architecture Technology, A.A.S.**
Coordinating Dean: Abe Eftekhari, AN  
SLO Lead Faculty: Harvey Liebman, AL

- Students will be able to communicate graphically the architectural aspects of a building for the purposes of presentation and construction using manual drawing.
- Students will be able to describe how buildings are presently constructed.
- Students will be able to describe how buildings have been designed and constructed from antiquity to the present.
- Students will be able to analyze and describe how buildings are structurally supported.
- Students will be able to describe the systems of heating, cooling and electrical distribution in buildings.
- Students will be able to describe how site characteristics influence the design and construction of buildings.
- Students will be able to communicate graphically the architectural aspects of a building for the purposes of presentation and construction using computer graphics.
- Students will be able to methodically design a building.

---

**Automotive Technology, A.A.S.**
Coordinating Dean: Dee Martin, MA; Bruce Bowman, AL  
SLO Lead Faculty: George Bolash, MA; Reg Bennett, AL

- Use available service manuals in locating specifications related to the inspection, repair, and adjustment of automotive systems (i.e., Manufacturers Service Manuals, Mitchell-On-Demand & All-Data, Identifix, etc.).
- Use various test equipment to diagnose and repair defects, to determine the logical cause of the failure through complete and accurate analysis and discuss their findings.
- Properly care for and use common technician hand tools, power equipment, and standard automotive shop equipment according to NOVA’s shop safety procedures.
- Use measuring tools to skillfully and accurately diagnose the internal combustion engine.
- Explain the operating principles of automotive fuel systems, ignition systems, emissions, instrumentations, chassis control and possesses a working knowledge of current computerized powertrain management systems.
- Analyze defects of automotive air conditioning and climate control systems and identify necessary preventative maintenance or corrective repairs.
- Explain the operation of, and perform service on, automatic and manual transmissions and transaxles, and differentials.
Apply basic electrical theory using wiring diagrams and schematics to diagnose and repair automotive electrical circuits including battery, starter and charging systems.

Discuss the theory of alignment, braking, suspension and steering systems, problem diagnosis and correction of braking, suspension, steering and alignment problems.

Diagnose and repair vehicles in all 8 areas of ASE certification.

Biotechnology, A.A.S.
Coordinating Dean: Dee Martin, MA
SLO Lead Faculty: Johanna Weiss, MA

- Explain the fundamental scientific concepts in biotechnology.
- Apply the scientific method including: planning and experimenting, collecting data, and analyzing and interpreting data.
- Demonstrate proficiency in standard lab procedures and in the use of basic lab equipment.
- Identify and follow lab safety procedures.
- Maintain proper lab documentation.
- Effectively communicate scientific concepts, strategies, and opinions in written and oral formats.
- Describe the ethical, regulatory, business, and legal aspects of the biotechnology industry.
- Demonstrate professional interpersonal skills and behaviors necessary for working and collaborating in a laboratory environment.

Business Administration, A.S.
Coordinating Dean: Maria Delongoria, WO
SLO Lead Faculty: Cathleen Behan, WO

- Students will be able to identify the various forms of business ownership (sole proprietorship, partnership and corporation) and the multiple ways of getting a business started.
- Students will be able to calculate the basic impact of marginal cost for the production of goods in a capitalist system.
- Students will be able to describe, the various theories related to the development of leadership skills, motivation techniques, teamwork and effective communication.
- Students will be able to construct the basic elements of a balance sheet and income statement utilizing the appropriate accounting equations.
- Students will be able to utilize computer skills through the Internet, word processing, and other productivity software to construct reports and presentations in the study of current business practices.
- Students will apply the planning, organizing, leading and control processes of management in identifying the various theories related to the development of leadership skills.
- Students will be able to identify the properties of market equilibrium and the creation of market shortages and surpluses within the scope of supply and demand.
- Students will be able to identify the factors of production in the creation of goods and services in an economic society.
### Business Management, A.A.S.
Coordinating Dean: Maria Delongoria, WO
SLO Lead Faculty: Cathleen Behan, WO

- Students will be able to identify the various forms of business ownership (*sole proprietorship, partnership and corporation*) and the multiple ways of getting a business started.
- Students will demonstrate understanding the legal consequences of certain fundamental types of business organizations (*sole proprietorship, franchise, partnership, corporation, Limited Liability Company, limited partnership, and limited liability partnership*).
- Students will be able to calculate the basic impact of marginal cost for the production of goods in an economic system.
- Students will be able describe, the various theories related to the development of leadership skills, motivation techniques, teamwork and effective communication.
- Students will be able to construct the basic elements of a balance sheet and income statement utilizing the appropriate accounting equations.
- Students will be able to utilize computer skills through the Internet, word processing, and other productivity software to construct reports and presentations of current business practices.
- Students will apply the planning, organizing, leading and control processes of management in identifying the various theories related to the development of leadership skills.
- Students will be able to identify the properties of market equilibrium and the creation of market shortages and surpluses within the scope of supply and demand.
- Students will be able to identify the factors of production in the creation of goods and services in an economic society.
- Students will be able to differentiate the ethical codes of compliance and integrity used by business organizations.
- Students will be able to identify various challenges facing the management of human resources.
- Students will be able to apply Z and t tests for Hypothesis Testing about the Mean of a Population, using manual methods and statistical programs.

### Clinical Data Coding Career Studies Certificate
Coordinating Dean: Andy Cornell, ME
SLO Lead Faculty: Jacqueline Gibbons, ME

- Communicate effectively with HIM professionals, the public, and the health care delivery team.
- Demonstrate knowledge of HIM regulatory compliance by oral and written communication.
- Perform quality improvement studies and practice professional ethics in the HIM field.
- Explain information processing in HIM.
- Demonstrate methodologies including problem solving and troubleshooting techniques.
- Demonstrate ethical and professional conduct.
- Apply knowledge of the use of medical coding in diagnosis and treatment.
<table>
<thead>
<tr>
<th>Program</th>
<th>Coordinating Dean</th>
<th>SLO Lead Faculty</th>
<th>SLO Lead Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication Design, A.A.S.</strong></td>
<td>Jim McClellan, AL</td>
<td>Julia Turner, LO</td>
<td></td>
</tr>
<tr>
<td>To research, formulate visual concepts and solve visual ideas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To analyze and evaluate artwork from various perspectives and apply to projects.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To receive suggestions and criticisms of his or her own work from others and consider the recommendations and apply these recommendations to their final assignments.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To evaluate visual concepts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To design visual concepts based on set criteria.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To produce visual concepts into completed projects.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To consider and apply technical and conceptual expertise in the creation of visual concepts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To apply the principles of design and elements of composition.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To choose appropriate techniques and technical tools when expressing visual concepts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To organize a group to produce solutions to design problems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Computer Science, A.S.</strong></td>
<td>Stacy Thomas, WO</td>
<td>Tim Seaman, MA</td>
<td></td>
</tr>
<tr>
<td>Demonstrate techniques for problem analysis and algorithm design.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write computer programs using fundamental software development skills.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perform elementary file and directory-related activities using command-line interfaces.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proficiency in mathematical modeling using a high or low level programming language.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Write computer programs using Object-oriented programming features</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate critical thinking by applying appropriate data structures and Abstract Data Types (ADTs).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show their ability to work in groups to design and execute programs to solve problems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design fundamental logic circuits.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify the functions of basic and advanced computer hardware architecture.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Construction Management Technology, A.A.S.</strong></td>
<td>Bruce Bowman, AL</td>
<td>Denise Cantwell, AL</td>
<td></td>
</tr>
<tr>
<td>Students will communicate effectively consistent with career requirements of the construction management industry (orally and written).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will accurately interpret construction documentation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will identify characteristics of basic construction materials and explain their application in the construction industry.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will accurately estimate construction costs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will accurately prepare construction plans &amp; schedules utilizing industry standards.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will identify safe construction practices.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will be able to interpret construction related contractual and legal requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Contract Management, A.A.S.**
Coordinating Dean: Maria Delongoria, WO
SLO Lead Faculty:

- Students will perform surveying calculations necessary for site layout.
- Students will successfully identify and demonstrate skills necessary to manage human resources related to the construction industry.

<table>
<thead>
<tr>
<th>Contract Management, A.A.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating Dean: Maria Delongoria, WO</td>
</tr>
<tr>
<td>SLO Lead Faculty:</td>
</tr>
<tr>
<td>- Students will illustrate complete basic knowledge of sound principles and techniques of contract management.</td>
</tr>
<tr>
<td>- Students will perform substantive and procedural research using both manual and computer assisted means.</td>
</tr>
<tr>
<td>- Students will organize and role-play effective negotiation exercises on a team.</td>
</tr>
<tr>
<td>- Student will apply and demonstrate oral communication skills in exercises and reports.</td>
</tr>
<tr>
<td>- Students will interpret and develop basic contract fundamentals using different types of contracts.</td>
</tr>
<tr>
<td>- Students will inter-relate the language of negotiation in contracting.</td>
</tr>
</tbody>
</table>

**Dental Hygiene, A.A.S.**
Coordinating Dean: Andy Cornell, ME
SLO Lead Faculty: Mary Pryor, ME

- Assess a patient’s oral health status.
- Plan and document a patient’s treatment needs.
- Provide dental hygiene care to patients who present with slight, moderate, and severe periodontal disease.
- Evaluate the outcomes of treatment and determine subsequent treatment needs.
- Communicate the provision of oral health care services with diverse population groups.
- Evaluate and apply scientific literature and principles as a basis for evidenced-based practice.
- Expose and interpret radiographs.

**Diagnostic Medical Sonography, A.A.S.**
Coordinating Dean: Andy Cornell, ME
SLO Lead Faculty: Anita Freeman, ME

- Work in an ethical, legal, safe and effective manner in diagnostic imaging.
- Communicate effectively with patients, families and other health care provider.
- Provide patient care essential to sonographic sciences.
- Apply knowledge of anatomy, physiology and professional and clinical standards to accurately image anatomical structures.
- Determine proper technical equipment parameters to achieve optimum images of anatomical structures.
- Evaluate images for diagnostic information, positioning and other pertinent technical details.
- Apply knowledge of scanning planes and methods and their usage in anatomical...
- Effectively use written and verbal communication skills in the evaluation, documentation, and description of normal/abnormal findings in a professional case presentation.
- Practice professional work habits and appropriate interpersonal relationships with patients, families and other members of the health care team.

**Drivers Education Career Studies Certificate**
Coordinating Dean: Ron Buchanan, MA
SLO Lead Faculty: Mark Glago, MA

- Students will summarize instructional content as it relates to the Drivers’ Education Standards of Learning for Va. public schools.
- Students will define and describe the nature of driving tasks as they relate to the complex highway transportation system.
- Students will analyze and identify driving hazards and correctly interpret how to minimize these risks.
- Students will define and give examples of the capabilities and limitations of vehicles under various driving conditions.
- Students will distinguish the legal and moral responsibilities of being a highway transportation user.

**Early Childhood Development, A.A.S.**
Coordinating Dean: Ron Buchanan, MA
SLO Lead Faculty: Kathleen Ludlow, MA

- Analyze the elements of a quality program.
- Apply developmental knowledge to the creation and implementation of activities and programs to promote the cognitive development of children.
- Apply developmental knowledge to the creation and implementation of activities and programs which promote physical growth in children.
- Apply developmental knowledge to the creation of activities and programs which promote social and emotional development in young children.
- Apply developmental knowledge to the creation and implementation of activities and programs which promote language in young children.
- Select appropriate strategies when working with children who have exceptionalities or developmental delays.
- Prepare curriculum that supports young children in the development of learning strategies and skills.
- Integrate strategies for working with diverse groups into the curriculum and activities created.

**Emergency Medical Services, A.A.S.**
Coordinating Dean: Andy Cornell, ME
SLO Lead Faculty: Holly Frost, ME

- EMT-Basic students will perform BLS/airway skills during hands-on skills sessions.
- Paramedic students will perform advanced airway maneuvers and other life support skills during hands-on sessions.
- EMS students, at all levels, will implement patient care assessments and treatments while performing in clinical and field internship settings, as observed by their preceptors, appropriate to their specific training level.
- Students of all EMS levels will demonstrate differential diagnosis competencies regarding a broad variety of medical conditions, covering all age ranges, and will demonstrate appropriate treatment modalities, to their appropriate EMS skill level.

**Engineering, A.S.**
Coordinating Dean: Abe Eftekhari, AN  
SLO Lead Faculty: Rassa Rassai, AN; Robert Woodke, AN

- Student will apply and demonstrate engineering problem solving methodology.
- Student will demonstrate their knowledge of engineers' professional responsibility and ethics.
- Student will demonstrate the ability to design algorithm in solving engineering problems.
- Student will be able to analyze the position of rigid bodies and their applied forces at rest and in motion.
- Student will be able to describe mechanics of deformable bodies.
- Student will demonstrate ability to work effectively as a team.

**Engineering Technology, A.A.S.**
Coordinating Dean: Abe Eftekhari, AN; Bruce Bowman, AL;  
SLO Lead Faculty: Siamak (Mike) Ghorbanian, AL; Rudy Napisa, AN

- Students will be able to apply their knowledge and skills of Computer Aided Drafting to start and complete engineering drafting projects.
- Students will demonstrate the appropriate preparation to perform the functions of an engineering aide or designer in the Engineering Technology field.
- Students will be able to apply the principles of mechanics including fluid mechanics in the analyses and solutions of engineering problems and designs.
- Students will be able to synthesis their knowledge of the fundamentals and practices of engineering technology.
- Students will demonstrate professional skills in oral, written and graphical communication.
- Students will demonstrate interpersonal skills to function as part of a team.

**Fine Arts, A.A., A.A.A.**
Coordinating Dean: Bruce Mann, AN  
SLO Lead Faculty: Randy Michener, MA

- Will be able to produce artworks in several media.
- Will be able to create artwork from direct observation.
- Will be able to create realistic or abstract/conceptual representations.
- Will be able to critically evaluate personal studio art projects or those of other students.
- Will be able to critically evaluate artworks in their historical context.
- Will be able to describe 2 and 3 dimensional art and how it relates to culture in which it
was created
- Will create a portfolio of visual works/projects that can be used to satisfy transfer or other professional requirements such as presentation to apply for a gallery exhibit.

### Fine Arts, A.A.A. - Photography Specialization
Coordinating Dean: Jim McClellan, AL  
SLO Lead Faculty: Gail Rebhan, WO
- Control the image capture.
- Control the output process.
- Manage image assets and workflow.
- Solve technical and aesthetic problems independently and creatively.
- Produce and present a coherent body of work in a chosen genre.
- Discuss work in the medium with appropriate vocabulary.
- Discuss images in terms of the history and theory of the medium.

### Fire Science Technology, A.A.S.
Coordinating Dean: Celeste Dubeck-Smith, AN  
SLO Lead Faculty: Michael Pariser, AN
- Students will be able to explain the basic theories and fundamentals of how and why fires start, spread and are controlled.
- Students will be able to identify and analyze the components of building construction related to fire and life safety, including inspections, pre-incident planning and emergency operations.
- Students will be able to explain and perform basic responsibilities of company officers including supervision, delegation, problem solving, decision-making, communications and leadership.
- Students will be able to explain the basic philosophy, organization, and operation of fire and injury prevention programs.
- Students will be able to apply the theory and principles for the use of water in fire suppression activities, including hydraulic principles.

### Fitness Career Studies Certificate
Coordinating Dean: Stacy Thomas, WO  
SLO Lead Faculty: Sue Thompson, AN
- Graduates will explain the principles fitness and demonstrate proper technique for flexibility, muscular strength, muscular endurance, and cardiovascular exercises.
- Graduates will identify the muscular-skeletal structure as it relates to fitness.
- Graduates will analyze their food intake using nutrition guidelines.
- Graduates will interpret results of body composition assessments and apply to weight management strategies.
- Graduates will describe injury prevention and demonstrate appropriate treatment.
- Graduates will analyze case studies to demonstrate their understanding of the physical training concepts and physiological factors of training.
- Graduates will instruct individual and group exercise sessions.
- Graduates will administer physical fitness assessments on muscular strength, muscular
endurance, cardiovascular endurance, flexibility, and body composition.

- Graduates will demonstrate correct procedures for cardiopulmonary resuscitation and use of the AED.
- Graduates will perform a fitness level of very good to excellent by successfully passing 3 out of 4 fitness assessments.

### General Studies, A.S.

Coordinating Dean: Adrienne Hinds, AN  
SLO Lead Faculty: Rima Gulshan, AN

- Students will demonstrate the ability to interact with others, resulting in understanding and being understood.
- Students will demonstrate the ability to evaluate evidence carefully and apply reasoning to decide what to believe and how to act.
- Students will demonstrate an awareness, understanding and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national and global communities.
- Students will demonstrate the ability to recognize when information is needed and will have the ability to locate, evaluate and use if effectively.
- Students will demonstrate the ability to develop and/or refine personal wellness goals. Students will demonstrate the ability to develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career and interpersonal decisions.
- Students will demonstrate the ability to use numerical, geometric, and measurement data and concepts, mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions and possess the skills and knowledge necessary to apply the use of logic, numbers and mathematics to deal effectively with common problems and issues.
- Students will demonstrate the ability to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict and control natural phenomena.

### General Studies, A.S. - Recreation and Parks and Leisure Studies Specialization

Coordinating Dean: Bruce Mann, AN  
SLO Lead Faculty: Nancy Chamberlain, AN

- Identify local, state, and federal agencies, non-profit and commercial organizations that offer leisure services and/or grant support for service delivery
- Students will describe the principles of risk management and create a risk management tool
- Students will identify components of memorandum of understanding between partnership entities
- Students will demonstrate a land ethic to support sustainable principles of responsible travel and ecotourism
- Students will demonstrate knowledge of emergency management principles (basic critical incident command systems) and respond appropriately to emergencies (based on simulation models)
- Students demonstrate the ability to teach a skill to another student (peer to peer)
### Geographic Information Systems Career Studies Certificate

Coordinating Dean: Julia Turner, LO  
SLO Lead Faculty: Mike Krimmer, LO

- Students will define and employ geospatial vocabulary.  
- Students will plan and perform spatial analysis.  
- Students will prepare and present geo-spatial material to an end-user.  
- Students will manage diverse spatial data.  
- Students will plan, develop and maintain a GIS.

### Health Information Management, A.A.S.

Coordinating Dean: Andy Cornell, ME  
SLO Lead Faculty: Jacqueline Gibbons, ME

- The students will be able to interpret and explain Health Data Structure, Content & Standards.  
- Students will distinguish and differentiate between Healthcare Information Requirements & Standards.  
- Students will be able to apply the Clinical Classification Systems appropriately.  
- Students will be able to analyze and apply Reimbursement Methodologies as appropriate.  
- Students will be able to apply Health Statistics, Biomedical Research & Quality Management.  
- The students will be able to analyze and compare quality management and performance improvement activities.  
- Students will be to apply procedures related to healthcare delivery system in the U.S.  
- Students will be able to interpret and apply principals as they relate to healthcare privacy, confidentiality, legal and ethical issues.  
- Students will be able to identify and design information and communication technologies and apply policies and procedures as they relate to data, information and file structures in healthcare systems.  
- Students will be able to compare and utilize data storage and retrieval techniques.  
- Students will be able to differentiate between human, financial and physical resources.

### Historic Preservation Career Studies Certificate

Coordinating Dean: Julia Turner, LO  
SLO Lead Faculty: David Porter, LO

- Students will demonstrate analytical skills in assessing museum exhibits and objects.  
- Students will demonstrate the ability to properly care for museum objects.  
- Students will produce a preservation portfolio of their work suitable for use during an employment interview.
### Horticulture Technology, A.A.S.

Coordinating Dean: Joyce Samuels, LO  
SLO Lead Faculty: David Scheid, LO  
- Diagnose plant problems and recommend proper controls.  
- Use resources to locate horticultural information.  
- Calculate areas and volumes of landscape features.  
- Correctly identify 200 plants by family & scientific name.  
- Neatly draw a landscape plan and quick perspective sketch.

### Hospitality Management, A.A.S.

Coordinating Dean: Celeste Dubeck-Smith, AN  
SLO Lead Faculty: Janet Sass, AN  
- Students will compare the various sectors of the hospitality industry and recognize the unique characteristics and attributes of each and their affect on quality of work like.  
- Students will describe and apply the four functions of management: plan, organize, lead and control.  
- Students will prepare and evaluate a variety of different food products by following standardized recipes and using appropriate cooking techniques.  
- Students will evaluate and interpret a company’s profit and loss statement.  
- Students will illustrate the proper use and care of commercial food production equipment.  
- Students will apply approved food handling/safety standards in the preparation, service and storage of food.  
- Students will actively participate in the execution of different style catering functions.

### Information Systems Technology, A.A.S.

Coordinating Dean: Dee Martin, MA  
SLO Lead Faculty: Charlene Phillips, MA  
- Be able to distinguish between a class and an object.  
- Be able to define normalization and define why it is necessary in the creation of a relational database.  
- Be able to describe memory types and allocation methods.  
- Be able to define the OSI reference model and layers.  
- Be able to recognize the impact of cyber ethics on the IT field.  
- Be able to list the advantages and disadvantages of the UNIX operating system.  
- Be able to define the process of developing requirements.

### Information Technology, A.S.

Coordinating Dean: Dee Martin, MA  
SLO Lead Faculty: Charlene Phillips, MA  
- Be able to distinguish between a class and an object.  
- Be able to define normalization and define why it is necessary in the creation of a relational database.
• Be able to describe memory types and allocation methods.
• Be able to define the OSI reference model and layers.
• Be able to identify correct syntax and logic in Java or C++ code.
• Be able to identify components of a multimedia web site.

Interior Design, A.A.S.
Coordinating Dean: Julia Turner, LO
SLO Lead Faculty: Kristine Winner, LO

• Students will apply technical drawing skills to graphically illustrate design concepts.
• Students will utilize basic building and accessibility codes related to the health, safety and welfare of the public to develop interior floor plans.
• Students will practice business management including estimating, marketing, business structures and ethics as they relate to the field of interior design.
• Students will recognize and evaluate appropriate interior finish materials and textiles particularly as they relate to issues of sustainability.
• Students will apply critical, analytical and strategic thinking skills in the interpretation of project requirements.
• Students will recognize and identify major styles of art, architecture and furniture and be able to explain their significance in relation to the design of the present day.
• Students will demonstrate presentation skills including technical skills required to develop finish boards and oral skills to convey ideas.
• Students will develop accurately scaled floor plans including furniture and fixtures as well as other construction drawings needed to convey information to a furniture installer or building contractor.
• Students will produce design projects utilizing basic color theory.
• Students will illustrate how to light an interior space using a variety of sources of illumination.

Liberal Arts, A.A.
Coordinating Dean: Bruce Mann, AN
SLO Lead Faculty: SLO Team

• Students will demonstrate the ability to interact with others, resulting in understanding and being understood.
• Students will demonstrate the ability to evaluate evidence carefully and apply reasoning to decide what to believe and how to act.
• Students will demonstrate an awareness, understanding and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national and global communities.
• Students will demonstrate the ability to recognize when information is needed and will have the ability to locate, evaluate and use if effectively.
• Students will demonstrate the ability to develop and/or refine personal wellness goals. Students will demonstrate the ability to develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career and interpersonal decisions.
• Students will demonstrate the ability to use numerical, geometric, and measurement data and concepts, mathematical skills, and principles of mathematical reasoning to
draw logical conclusions and to make well-reasoned decisions and possess the skills and knowledge necessary to apply the use of logic, numbers and mathematics to deal effectively with common problems and issues.
- Students will demonstrate the ability to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict and control natural phenomena.

### Marketing, A.A.S.
Coordinating Dean: Celeste Dubeck-Smith, AN  
SLO Lead Faculty: Katherine Olson, AN

- Communicate effectively in both oral and written formats with grammatical accuracy
- Use the Internet to locate information concerning target markets, and potential sales opportunities.
- Calculate basic business math successfully
- Describe the elements of the marketing mix (product, price, place, and promotion) and their integration to achieve customer and organization satisfaction.
- Apply the marketing principles such as marketing strategies, sales promotion, sales management, good customer service, public relations and ethical procedures in consumer and business transactions.
- Explain the importance of global marketing and methods of reaching the international customer.
- Show how to achieve organizational objectives by effectively interacting with others as team members and as team leaders.

### Massage Therapy Career Studies Certificate
Coordinating Dean: Stacy Thomas, WO  
SLO Lead Faculty: Nancy Crippen, WO

- Effectively blend Swedish and deep tissue strokes to perform a full body massage.
- Integrate musculoskeletal anatomy and physiology into massage techniques.
- Identify indications and contra-indications to determine techniques appropriate for each client.
- Demonstrate ethical behavior in the client/therapist relationship.
- Incorporate body mobilization and stretching techniques into bodywork.
- Demonstrate the principles of proper body mechanics when performing massage.
- Perform pre-massage consultations with clients using proper notations on session charts and post-massage evaluations.
- Construct a business plan that addresses business structures, management techniques and ethics.
- Perform cardio/pulmonary resuscitation and basic first aid.

### Medical Laboratory Technology, A.A.S.
Coordinating Dean: Andy Cornell, ME  
SLO Lead Faculty: Frankie Harris-Lyne, ME

- Communicate effectively to serve the needs of patients, the public, and the healthcare delivery team.
- Demonstrate laboratory safety and regulatory compliance.
- Perform quality assessment in the laboratory.
- Explain information processing in the clinical laboratory.
- Collect, process, and analyze biological specimens.
- Demonstrate methodologies including problem solving and troubleshooting techniques.
- Demonstrate ethical and professional conduct.
- Apply knowledge of the use of laboratory results in diagnosis and treatment.
- Apply knowledge of technical training sufficient to orient new employees.

<table>
<thead>
<tr>
<th>Music, A.A., A.A.A., and Jazz Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating Dean: Bruce Mann, AN</td>
</tr>
<tr>
<td>SLO Lead Faculty: Mark Whitmire, AL</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• The student will be able to render a performance that is musically expressive and technically accurate.</td>
</tr>
<tr>
<td>• The student will be able to analyze the musical structure of a composition.</td>
</tr>
<tr>
<td>• The student will be able to perform pieces, exercises, scales and progressions accurately.</td>
</tr>
<tr>
<td>• The student will be able to perform effectively in a group.</td>
</tr>
<tr>
<td>• The student will be able to provide an overview of the history of music / history of jazz and popular music.</td>
</tr>
<tr>
<td>• The student will be able to effectively research and write on topics in the area of music / jazz and popular music.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Music Recording Technology Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating Dean: Julia Turner, LO</td>
</tr>
<tr>
<td>SLO Lead Faculty: Sanjay Mishra, LO</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• Demonstrate a thorough knowledge of properties of sound and acoustics.</td>
</tr>
<tr>
<td>• Creatively use technical knowledge of microphones and microphone techniques in audio applications.</td>
</tr>
<tr>
<td>• Demonstrate a fundamental knowledge of basics of studio recording techniques.</td>
</tr>
<tr>
<td>• Operate a Digital Audio Workstation (DAW).</td>
</tr>
<tr>
<td>• Be able to demonstrate the ability to record a live performance using a mixing console.</td>
</tr>
<tr>
<td>• Have knowledge of trade publications, associations and societies.</td>
</tr>
<tr>
<td>• Have a fundamental knowledge of copyright law.</td>
</tr>
<tr>
<td>• Demonstrate the skills required to maintain basic electronic equipment found in a typical studio and live situations.</td>
</tr>
<tr>
<td>• Demonstrate knowledge of sound studio design and re-enforcement</td>
</tr>
<tr>
<td>• Seamlessly edit digital audio files and author a commercial quality CD using ProTools software and computer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nursing, A.A.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinating Dean: Flo Richman, ME</td>
</tr>
<tr>
<td>SLO Lead Faculty: Patricia Tumminia, ME</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>• Demonstrate quantitative reasoning in the practice of nursing.</td>
</tr>
</tbody>
</table>
- Demonstrate using community-based nursing in the promotion of health, in providing for a safe and effective environment, and promoting/maintaining physiological and psychological integrity.
- Utilize the nursing process, critical thinking strategies, and Maslow’s Hierarchy of Needs to provide nursing care along the health/illness continuum throughout the life cycle.
- Provide culturally competent therapeutic nursing care to clients with common, well-defined health needs in community-based settings.
- Communicate effectively in diverse settings.
- Utilize the teaching/learning process in providing nursing care.
- Demonstrate the ability to manage client care.
- Demonstrate the use of critical thinking throughout the nursing process in the provision of client care.

**Paralegal Studies, A.A.S.**
Coordinating Dean: Bruce Bowman, AL
SLO Lead Faculty: Joyce McMillan, AL

- Speak knowledgeably about the paralegal profession and define the difference between the roles of attorneys and paralegals.
- Identify legal issues, as they are presented in the context of hypothetical client scenarios involving the eight areas of law covered in the curriculum (business organization, contract, criminal, estate planning and probate, evidence and procedure, family, real estate, and tort law).
- Locate governing federal or state Constitutional provisions, statutes, regulations and case decisions, using both manual and computer assisted means.
- Analyze and reason to apply legal principles to factual situations.
- Identify and locate standard forms appropriate to specific legal problems.
- Draft legal documents, including but not limited to pleadings, contracts, wills and deeds.
- Identify the courts or agencies having jurisdiction over various cases at various stages in litigation.
- Speak clearly about a legal issue and its resolution.
- Write clearly, using appropriate citation form, about a legal issue and its resolution.
- Identify and resolve ethical issues presented in the course of hypothetical client situations.

**Phlebotomy Career Studies Certificate**
Coordinating Dean: Andy Cornell, ME
SLO Lead Faculty: Frankie Harris-Lyne, ME

- Communicate effectively to serve the needs of patients, the public, and the health care delivery team.
- Demonstrate laboratory safety and regulatory compliance.
- Perform venipuncture and dermal puncture collection, handling, and processing.
- Demonstrate ethical and professional conduct.
- Develop problem-solving skills in the pre-analytical phase of specimen collection.
- Relate knowledge of body systems with the most common diagnostic laboratory testing for each system.
**Photography, A.A.S.**  
Coordinating Dean: Jim McClellan, AL  
SLO Lead Faculty: Aya Takashima, AL  
- Control the image capture process.  
- Control the image output process.  
- Manage image assets and workflow.  
- Solve technical and aesthetic problems independently and creatively.  
- Produce and present a coherent body of work in a chosen genre.  
- Discuss work in the medium with correct and appropriate vocabulary.  
- Discuss images in terms of the history and theory of the medium.  
- Identify career options in the field.

**Physical Therapist Assistant, A.A.S.**  
Coordinating Dean: Andy Cornell, ME  
SLO Lead Faculty: Patricia Ottavio, ME  
- Implement a treatment under the direction and supervision of a physical therapist.  
- Perform data collection and measurement techniques selected by a physical therapist.  
- Solve clinical problems and make treatment decisions based on the plan of care established by a physical therapist.  
- Effectively communicate when working with patients, families, colleagues, and other health care professionals.  
- Work in an ethical, legal, safe and effective manner under the direction and supervision of a physical therapist.  
- Develop lifelong learning habits that reflect professional development.

**Professional Writing for Business, Government and Industry Certificate**  
Coordinating Dean: Ron Buchanan, MA; Lori Leeker, WO  
SLO Lead Faculty: Joyce Brotton, AN  
- Apply all phrases of writing process including prewriting, drafting, and revision, documenting sources, and avoiding plagiarism.  
- Write a precise, clear, and properly formatted technical report.  
- Compose written business document in contemporary business format and style.  
- Write and research articles following conventions and ethics of journalistic writing.  
- Compose and edit hypertext documents with consistent tone, ethics, and style for world wide web.  
- Recognize correct fundamentals of English grammar, including punctuation, and basic logic of written communication.  
- Produce edited document with application of copy and comprehensive editing.  
- Apply knowledge gained in entire program in Capstone Writing Internship.
### Radiography, A.A.S.
**Coordinating Dean:** Andy Cornell, ME  
**SLO Lead Faculty:** Marilyn Sinderbrand, ME
- Apply Knowledge of radiation protections to minimize patient dose.  
- Communicate effectively to serve needs of community and other health care providers.  
- Apply Patient care essentials to radiologic sciences.  
- Apply knowledge of anatomy and positioning to accurately image Anatomical structures.  
- Evaluate images for diagnostic information.  
- Determine proper Exposure factors to achieve optimum images.

### Real Estate Brokerage Career Studies Certificate
**Coordinating Dean:** Celeste Dubeck-Smith, AN  
**SLO Lead Faculty:**
- Apply Principles of Real Estate in order to effectively perform the duties of a salesperson.  
- Demonstrate an ability to set up and manage a real estate firm and establish a business plan for the firm.  
- Prepare appraisals using three appraisal approaches (market approach, cost approach, and the income approach).  
- Explain the difference between the primary and secondary mortgage markets and be able to assist a client in obtaining financing.  
- Describe the legal interest in real estate and the financing instruments affecting a real estate transaction and be able to fill out a purchase agreement.

### Real Estate Residential Appraisal Career Studies Certificate
**Coordinating Dean:** Celeste Dubeck-Smith, AN  
**SLO Lead Faculty:**
- Prepare appraisals using the three appraisal approaches (market approach, cost approach and the income approach).  
- Explain the difference between the primary and secondary mortgage markets and be able to assist a client in obtaining financing.  
- Demonstrate an ability to choose the proper appraisal approach to appraise single family residences and render a proper appraisal report.  
- Apply Virginia appraisal law and standard principles and practices with regard to their application to residential property appraising.

### Respiratory Therapy, A.A.S.
**Coordinating Dean:** Andy Cornell, ME  
**SLO Lead Faculty:** Kathy Grilliot, ME
- Demonstrate knowledge of the anatomy and physiology of the cardiopulmonary system; assessment, treatment and evaluation of patients with cardiopulmonary disease using SOAP notes.  
- Perform psychomotor and cognitive skills in all areas of non-critical care.
• Perform the psychomotor and demonstrate the cognitive skills in all areas of adult critical care.
• Perform the psychomotor and demonstrate the cognitive skills in all areas of neonatal/pediatric critical care.
• Perform the psychomotor and demonstrate the cognitive skills in the areas of respiratory therapy home care, patient education/disease management, pulmonary rehabilitation and cardiac diagnostics.
• Apply the knowledge of respiratory therapy information into patient care case studies and scenarios.
• Demonstrate ethical and professional conduct in the classroom, laboratory and clinical settings.
• Communicate effectively with respiratory care and other healthcare professionals.

Science, A.S.
Coordinating Dean: Abe Eftekhari, AN
SLO Lead Faculty: Mary Vander Maten, AN

• Students will be able to use mathematical reasoning to draw logical conclusions and make well reasoned decisions.
• Students will understand the scientific method and identify methods of inquiry that lead to scientific knowledge.
• Students will use graphical methods to organize and interpret data.
• Students will explain the atomic structure of basic chemical elements.
• Students will be able to explain the principles of chemical bonding in the formation and properties of molecules.
• Students will be able to use electronic communication, such as e-mail and blackboard, to interact with the faculty and other students.
• Students will be able to use standard laboratory techniques to describe and quantify compounds or objects.

Social Sciences, A.S.
Coordinating Dean: Ron Buchanan, MA
SLO Lead Faculty: SLO Team

• Students will demonstrate the ability to interact with others, resulting in understanding and being understood.
• Students will demonstrate the ability to evaluate evidence carefully and apply reasoning to decide what to believe and how to act.
• Students will demonstrate an awareness, understanding and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national and global communities.
• Students will demonstrate the ability to recognize when information is needed and will have the ability to locate, evaluate and use if effectively.
• Students will demonstrate the ability to develop and/or refine personal wellness goals. Students will demonstrate the ability to develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career and interpersonal decisions.
• Students will demonstrate the ability to use numerical, geometric, and measurement
data and concepts, mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions and possess the skills and knowledge necessary to apply the use of logic, numbers and mathematics to deal effectively with common problems and issues.

- Students will demonstrate the ability to adhere to a self-correcting system of inquiry (the scientific method) and rely on empirical evidence to describe, understand, predict and control natural phenomena.

### Social Sciences, A.S. - Teacher Education Specialization

Coordinating Dean: Ron Buchanan, MA  
SLO Lead Faculty: Karen Sheble, MA

- Students will identify and describe the licensure/certification requirements for teacher education (pre K-12).
- Students will summarize, reflect upon and outline their field experiences in the public school systems during their 40 field placement hours.
- Students will compare and analyze principles, theories, and history of education in the U.S. to actual practice in the classroom.
- Students will summarize and give examples of the field of education; focusing on the inter-relationship of teaching, learning, students, and society.
- Students will illustrate and explain assessment techniques in the public school systems.
- Students will prepare and compose topics related to practice in a variety of communities, identifying students of differing ages and with culturally diverse and exceptional populations.

### Substance Abuse Rehabilitation Counselor Certificate

Coordinating Dean: Jim McClellan, AL  
SLO Lead Faculty: Ivy Beringer, AL

- Describe different recovery models that apply to substance abuse treatment and Rehabilitation.
- Describe and implement approaches that enhance personal development, decision-making abilities, personal responsibility, and quality of life of individuals with a disability.
- Describe, in general, the organizational structure of the rehabilitation, education, and healthcare systems, including public, private-for-profit, and not-for-profit service settings.
- Articulate the value of consumer empowerment, choice, and personal responsibility in the rehabilitation process.
- Assist the development of transition strategies to successfully complete the rehabilitation process.
- Demonstrate counselor sensitivity to stressors and the role of positive Attitudes in responding to coping barriers and challenges.

### Travel and Tourism Certificate

Coordinating Dean: Celeste Dubecck-Smith, AN  
SLO Lead Faculty: Mark Stillions, AN

- Identify different areas of the Travel and Tourism Industry and jobs within a travel career.
- Describe the role the environment has in tourism and how travelers can affect the environment negatively or positively.
- Incorporate service learning into travel and tourism courses.
- Apply skills to qualify a client’s needs and match a destination and accommodations to meet those needs.
- Describe sightseeing sites around the world.
- Define tourism vocabulary.

Veterinary Technology, A.A.S.
Coordinating Dean: Tregel Cockburn, LO
SLO Lead Faculty: Leslie Sinn, LO

- Participate in facility management utilizing traditional and electronic media and appropriate medical terminology and abbreviations.
- Communicate in a professional manner in all formats-written, oral, non-verbal and electronic.
- Follow and uphold applicable laws and the veterinary technology profession's ethical codes to provide high quality care to patients.
- Safely and effectively administer prescribed drugs to patients.
- Accurately dispense and explain prescribed drugs to patients.
- Demonstrate and perform patient assessment techniques in a variety of animal species.
- Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species.
- Safely and effectively manage patients in all phases of anesthetic procedures.
- Safely and effectively select, utilize and maintain anesthetic delivery and monitoring instruments and equipment.
- Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species.
- Understand and provide the proper instruments, supplies and environment to maintain asepsis during surgical procedures.
- Properly package, handle and store specimens for laboratory analysis.
- Properly carry out analysis of laboratory specimens.
- Safely and effectively produce diagnostic radiographic and non-radiographic images.
- Safely and effectively handle common laboratory animals.
- Understand and demonstrate the approach to providing safe and effective care for birds, reptiles, amphibians, guinea pigs, hamsters, gerbils and ferrets.

Welding: Basic Techniques Career Studies Certificate
Coordinating Dean: Dee Martin, MA
SLO Lead Faculty: Matthew Wayman, MA

- Perform technical work related to welding applying OSHA safety and industry standards in a work environment.
- Apply physics, chemistry, and basic electrical principles/power source knowledge to solve typical problems and make decisions involving welding related tasks as well as when they write and specify welding procedure.
- Fabricate a project and estimate the cost of the welding consumables and metal.
- Select appropriate filler material for compatible admixing and dilution in the writing of welding procedure for various ferrous and non-ferrous metals.
- Read and correctly interpret basic welding fabrication drawings, sketches, symbols, and/or welding specifications.
- Demonstrate proficiency of the welding subject through hands-on performance, written work, and in theory.
NORTHERN VIRGINIA COMMUNITY COLLEGE

College Mission

With commitment to the values of access, opportunity, student success, and excellence, the mission of Northern Virginia Community College is to deliver world-class in-person and online post-secondary teaching, learning, and workforce development to ensure our region and the Commonwealth of Virginia have an educated population and globally competitive workforce.


I. STUDENT SUCCESS - Northern Virginia Community College will move into the top tier of community colleges with respect to the key indicators of student success: college readiness, developmental course completion, retention, graduation, transfer, and career placement of its students.

II. ACCESS - Northern Virginia Community College will increase the number and diversity of students being served to mirror the population growth of the region.

III. TEACHING AND LEARNING - Northern Virginia Community College will focus on student success by creating an environment of world-class teaching and learning.

IV. EXCELLENCE - Northern Virginia Community College will develop ten focal points of excellence in its educational programs and services that will be benchmarked to the best in the nation and strategic to building the College's overall reputation for quality.

V. LEADERSHIP - Northern Virginia Community College will serve as a catalyst and a leader in developing educational and economic opportunities for all Northern Virginians and in maintaining the quality of life and economic competitiveness of the region.

VI. PARTNERSHIPS - Northern Virginia Community College will develop strategic partnerships to create gateways of opportunity and an integrated educational system for Northern Virginians who are pursuing the American Dream.

VII. RESOURCES - Northern Virginia Community College will increase its annual funding by $150 million and expand its physical facilities by more than one million square feet in new and renovated space. This includes the establishment of two additional campuses at epicenters of the region’s population growth, as well as additional education and training facilities in or near established population centers.

VIII. EMERGENCY PREPAREDNESS AND CONTINUITY OF OPERATIONS - Northern Virginia Community College will be recognized as a leader among institutions of higher education in Virginia for its development and testing of emergency response and continuity of operation plans.